



Routledge Studies in World Literatures and the Environment

(ECO)ANXIETY IN NUCLEAR HOLOCAUST FICTION AND CLIMATE FICTION

DOOMSDAY CLOCK NARRATIVES

Dominika Oramus



(ECO)ANXIETY IN NUCLEAR HOLOCAUST FICTION AND CLIMATE FICTION

(Eco)Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives demonstrates that disaster fiction—nuclear holocaust and climate change alike—allows us to unearth and anatomise contemporary psychodynamics and enables us to identify pretraumatic stress as the common denominator of seemingly unrelated types of texts. These Doomsday Clock Narratives argue that earth's demise is soon and certain. They are set after some catastrophe and depict people waiting for an even worse catastrophe to come. References to geology are particularly important—in descriptions of the landscape, the emphasis falls on waste and industrial bric-a-brac, which is seen through the eyes of a future, post-human archaeologist. Their protagonists have the uncanny feeling that the countdown has already started, and they are coping with both traumatic memories and pretraumatic stress. Readings of novels by Walter M. Miller, Nevil Shute, John Christopher, J. G. Ballard, George Turner, Maggie Gee, Paolo Bacigalupi, Ruth Ozeki, and Yoko Tawada demonstrate that the authors are both indebted to a century-old tradition and inventively looking for new ways of expressing the pretraumatic stress syndrome common in contemporary society. This book is written for an academic audience (postgraduates, researchers, and academics) specialising in British Literature, American Literature, and Science Fiction Studies.

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Doomsday Clock Narratives

Dominika Oramus

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Introduction

Doomsday Clock Narratives

In “Fermi and Frost” (1985), a Hugo Award-winning sci-fi story written during Perestroika, Frederik Pohl depicts the world after an unexpected and rapid nuclear war. A small group of people in Iceland have survived the blasts. They live deep underground and try to grow crops, something that is only possible thanks to geothermal energy. The world above is in the clutches of a nuclear winter—earth is polluted, dark, and frosty—and the survivors continuously ask themselves one burning question: whether the Sun will return soon enough for life to be rekindled and for humankind to rebuild their civilisation. During a short excursion to the permafrost-bound dark fields of the island, the protagonist—who used to be a professor of astrophysics—tells his small son about the so-called Fermi Paradox, which explains why the human race has neither encountered nor communicated with other intelligent beings. He explains that there are only three possible explanations of the paradox: there might be no intelligent life outside the solar system; the aliens might not want to contact us; or, lastly, as soon as any intelligent race gets smart enough to travel into space, they kill themselves off. The protagonist is aware that, at that very moment, human civilisation is trying to get through an evolutionary bottleneck: our own technological achievements are so immense that they may (or may not) be the death of us.

It is hardly surprising this danger was initially voiced by Enrico Fermi, the creator of the first man-made atomic reactor. His question regarding other highly developed, intelligent races in the galaxy was famously asked in 1950, just five years after the Hiroshima and Nagasaki bombs were dropped. At the time, Fermi was still working at the Los Alamos National Laboratory and living in New Mexico, just a few miles from the Trinity test site. One day, while joking about Unidentified Flying Object (UFO) reports during a casual lunch with colleagues from the labs, he is said to have unexpectedly exclaimed, “Where are they?” and everybody around the table understood that he was talking about extraterrestrial life. Fermi

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estimated the number of intelligent species who could be living in our galaxy and was puzzled that we have not encountered any of them so far. The physicists realised that if his estimates were true, the Great Silence (or *silentium universi*, “silence of the universe” as it is called) had very profound implications. If there are so very many habitable planets in the universe, there should also be quite a number of sentient species. If some of these species were able to develop rocket technology and advanced communication systems within a few million years (a very short period in comparison to the age of our galaxy), as humans have, the Milky Way should be colonised. Yet there is no clear indication that alien civilisations have ever existed.

Some Search for Extraterrestrial Intelligence (SETI) scientists and sci-fi authors look for quite fantastic explanations of *silentium universi*. Frank Drake, for instance, argues that “the Universe permits only limited kinds of direct encounters among its residents” (Drake and Sobel 132), and David Lamb in *The Search for Extra Terrestrial Intelligence: A Philosophical Inquiry* examines purported evidence that human encounters with extraterrestrials do take place (125). However, if we exclude such UFO conspiracies and sci-fi scenarios of a cosmic embargo on contacting humankind, we are left with the very real question of whether the rapid development of every technologically advanced civilisation inevitably leads to its self-annihilation and the destruction of its home planet before colonisation of other worlds is possible. In the last seventy years, there have been numerous attempts to explain this enigma, and Pohl’s protagonist neatly sums up the most important aspects of the paradox. Perhaps we are the only intelligent race in the entire universe and thus the path our civilisation takes is new and unique, and there is no way of estimating our chances to get through the bottleneck and learn to wisely use potentially lethal technologies. Otherwise, we are doomed to soon render the earth inhabitable, which in turn provokes another set of questions concerning our agency (or lack thereof). Are we to blame for destroying nature if destroying it—nuking it or polluting it beyond redemption—is in our very nature? In other words, is humankind capable of deciding for themselves what to do with their planet, or are we doomed to wait for our own self-tailored demise, just like other organisms are doomed to behave in the way they have evolved to behave? “Is technological man still a part of Gaia or are we in some or in many ways alienated from her?” (128), asks James E. Lovelock in *Gaia: A New Look at Life on Earth*, referencing “the hubris of anthropogenic effects” (Elmore 10), our strong belief in the distinction between human and nature.

My book was inspired by these questions and the following observation: while, in mid-twentieth century, writers such as Frederik Pohl

imagined an inevitable planetary catastrophe in the form of the final thermonuclear war, today's intellectuals fear it will be caused by climate change. The author of *Light of the Stars: Alien Worlds and the Fate of the Earth*, astrophysicist Adam Frank, says in an interview that in his opinion human-driven climate change should be considered an astrobiology problem. The Anthropocene is for him "a planetary transition," and climate change is not the only aspect of it. From "an astrobiological perspective" Anthropocenes may be generic and we are now living in the times of "the sort of transition that everybody goes through, throughout the universe" (Billings). Frank sketches the broad picture and discusses anthropogenic changes on earth from the cosmic perspective of theorising about civilisations on other planets. In his opinion, they all go through "the sort of transition," which I understand as a bottleneck of advanced technology. This is precisely the moment when we either become one of the "long-lived civilisations" or, like in the pessimistic resolution of the Fermi Paradox, face extinction as we destroy the planet. Hoping for the former, it is difficult not to render the latter more probable when every day we hear and read reports of climate change, weather anomalies, fires, droughts, and animal species going extinct. Both during the Cold War and today, anticipating disaster is a part of our lives, and knowing that catastrophic changes could happen soon and feeling unable to do anything about it breeds frustration and fear. What has not changed since the 1950s is the anxiety produced by the latent belief that a human-induced end of life on earth is not only inevitable but also very near. The media coverage of the Cold War, the footage of the Hiroshima casualties and ruins, the reports on steadily rising mean temperatures, the images of melting ice caps, and the pictures of animals dying in hostile new environments provoke similar emotions: self-loathing, nostalgia, anger, guilt, and fear.

What I am interested in is how this complex set of emotions is reflected in disaster fiction written in the last seventy years. Referring to E. Ann Kaplan's illuminating essay "Is Climate-Related Pre-Traumatic Stress Syndrome a Real Condition?" I call the psychodynamics of anticipating global catastrophe pretraumatic stress syndrome (pre-TSS). Kaplan describes pre-TSS as "but one of several mental health conditions being theorized in the humanities and social sciences as a result of climate change and the environmental desecration resulting from it" (2020), pointing to the fact that this term is used by scholars who write about global psychodynamics rather than doctors of medicine, or analysts. I propose to stretch the meaning of pre-TSS to also refer to mid-twentieth-century anxieties which were not necessarily connected to climate change (though one may find instances of "cli-fi-like" catastrophes already in the 1950s), but rather resulted from the threat of nuclear war, and apply them to the

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reading of various non-realistic fictions. All these texts describe anthropogenic disasters leading to the demise of life on earth and pose questions concerning human agency, the distinction between humans and nature, and subliminal reactions to approaching extinction. The books' stories are set in the wake of some catastrophic event (be it a previous war or some minor climate calamity), and their protagonists cope with both traumatic memories and pretraumatic stress. These scenarios are fantastic, but clear-cut lines between fiction and non-fiction are blurred by the external contexts of the Cold War and global warming.

Managing anxieties requires pushing them into the unconscious, and it is hardly surprising that pre-TSS is depicted in non-realistic rather than mimetic genres of popular literature. Rosemary Jackson, in her classic *Fantasy. The Literature of Subversion*, praises fantasy for its “resistance to definitions ... its free-floating and escapist qualities,” which makes it free from “many of the conventions and restrictions of more realistic texts” (1). Fantasy “deals so blatantly and repeatedly with unconscious material” (6) that—although as a literature of “unreality”—it has “altered in character over the years in accordance with changing notions of what exactly constitutes reality” (4). Just like dreams, fantasy retains the ability to “recombine” elements taken from the reality of the dreamer/author to produce narratives which are not mimetically true yet reflect subliminal anxieties. By the term fantasy, Jackson means “a literary mode from which a number of related genres emerge” (7), and, similarly, to find a common denominator of related but generically separate texts dealing with all-too-probable fantastic catastrophes, I use the general term “disaster fiction” and, more specifically, “nuclear holocaust fiction” and “climate fiction” (cli-fi).

The novels I analyse in this book are obsessively focused on an imagined future calamity that is approaching and rapidly shortening the time we have left. Poetically, they might be called Doomsday Clock Narratives. This term seems appropriate as the image of a clock counting down the remaining minutes, which is so often used to epitomise the approaching threat of ecological disaster, was devised during the Cold War. But, as Michelle Bastian notices, “its remit was recently expanded to include the risks posed by climate change and biological weapons” (39). Bastian, who specialises in perceptions of time under climate change, calls the Doomsday Clock, created in 1947 by the *Bulletin of the Atomic Scientists*, “a way of indicating the likelihood of nuclear war” (39).

Apprehension and dread radiating from this image can be felt in disaster stories written in the late twentieth century, when a set of similar imagery was used, albeit in a far less rational and far more intuitive manner. In a prime example of a Doomsday Clock Narrative, J. G. Ballard’s “The Voices of Time,” the earth is arid and dusty; drained swimming pools and deserted

motorways are scattered on a depopulated desert, and people are suffering from prolonged spells of dreamless sleep, which finally lead to comas. Fauna and flora are mutating and withering away; the neurological sleeping disease is spreading like an epidemic and the already-dying protagonist grows aware that these phenomena are all related: entropy is increasing, and the entire universe is unwinding. The moment of this realisation—symbolised by the protagonist imagining a clock—comes when he is at an empty target range watching “the image of the mandala, like a cosmic clock” (192). The clock is coming to a stop and the protagonist feels “beyond hope but at last at rest” sweeping “down the broadening reaches of the river of time” (192). He keenly observes his body: the sleeping spells grow longer and longer and allow him to calculate that “at the present rate there should be about 4–5 weeks left” (183) before he falls into a terminal coma. In the story, we see his last days of consciousness; thus, the temporal mode is that of a countdown. Significantly, the protagonist’s countdown is reflected in the waning life on the planet and in the whole universe. The radioed signals reaching the earth from outer space replicate “a diminishing mathematical progression” (188), which the characters interpret to be “[a] countdown ... NGC 9743, somewhere in Canes Venatici ... The big spirals there are breaking up and they are saying goodbye” (188). The story ends with the death of the protagonist and fleeting visions of parallel disasters in space “the white gardens of the moon, and the blue people who had come from Orion and spoken in poetry to them of ancient beautiful worlds beneath golden suns in the island galaxies, vanished forever now in the myriad deaths of the cosmos” (195).

“The Voices of Time” was written in 1960, during the peak of the Cold War, and although it is not about atomic bombs and the final nuclear war (radiation is mentioned once or twice as one of the possible factors contributing to mutating DNA), it does reflect anxiety. I call this story a prime example of a Doomsday Clock Narrative for several reasons. First, it communicates the prevailing feeling that the demise is unavoidable and that the end of humankind is a part of some bigger picture: whatever is happening now on earth can be inscribed into some grand narrative, for example, the story of the inevitable rise and fall of every astrobiological civilisation, or a logical closure to human history, whose cornerstone has always been greed and ecological short-sightedness. Such a stance diminishes human guilt and human uniqueness suggesting that we only think we are (or ever were) capable of saving the planet. Doomsday Clock Narratives call into question human’s free will throughout human history, but, paradoxically, they also subvert this belief: the lingering thought that we might have had the chance of going beyond our evolutionary heritage is always present, thereby increasing frustration and anxiety.

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Second, Ballard's story is a Doomsday Clock Narrative because it is set *between catastrophes*: after the catastrophic event (in this case the appearance of the sleeping sickness pandemic) and before the final catastrophe (when everyone on earth is in a terminal coma and, on a large scale, entropy rules over the entire universe). It is remembering the traumatic experience of the first catastrophic event that makes it possible to imagine the final catastrophe. Faced with the inevitability of this catastrophe, focalisers no longer feel that they live in the present. They do not consider the future to be limitless and unknown; instead of seeing time as a river flowing forward, they adapt the temporal mode of a countdown. Moreover, they abandon the human perspective of one's own (or one's children's) lifetime and cease planning ahead. Instead, they are obsessed with the "deep time" (Farrier) of aeons in comparison with which the human time of technological civilisation on earth is brief and insignificant.

Third, as in Doomsday Clock Narratives, human life (or biological life at large) is doomed, and the emphasis falls on the inorganic matter, especially debris and petrified waste and other mementoes of today's consumerist culture. The focalisers often look at the surrounding landscape with the eyes of a distant post-human archaeologist surveying geological strata far into the future. Interestingly, this emphasis on geological metaphors is a quite recent phenomenon. Melina Pereira Savi in "The Anthropocene (and) (in) the Humanities: Possibilities for Literary Studies" describes the profound importance of geology within the intellectual framework of Anthropocene studies where "the strata, that is, the layers of rock that formed within this period of billions of years are analyzed." Already in "The Voices of Time," we see the contemporary world as future ruins: abandoned, drained, empty, and turned into mineral mausoleums. Still earlier, in *The Canticle for Leibowitz*, Walter Miller depicts our planet thousands of years after a nuclear purge and gives special attention to the mineral world: our concrete, our contraptions, and our motorways are transformed into some new, bizarre, and often dangerous rock formations. The reader is an archaeologist constantly recognising and interpreting the strata that, for the protagonists, are mineral layers of the landscape. This uncanny experience of recognising the familiar in the alien and the once-living in the long-dead is an intrinsic part of reading Doomsday Clock Narratives—yet only now, due to Anthropocene studies, do scholars possess the terminology to describe it.

Fourth, and most importantly, all the above aspects of Doomsday Clock Narratives—present in a nutshell in "The Voices of Time"—cause pre-TSS in the focalisers. The stress falls on their inner life and the subjective personal experience of living just before the end and knowing it—sometimes rationally, sometimes only subliminally. Acute anxiety is reflected in the narration: we frequently see flash-forwards to a future fantastic calamity,

or the world after it; the traumatic future is far more important than the moment now; descriptions of landscapes are often written in free indirect discourse, blending the objective and the subjective. Just like the protagonist of “The Voices of Time” anticipates his own end and projects anxiety on the world around him, so do the narrators of the novels I am going to analyse.

The rationale behind *(Eco)Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives* is to find an intellectual common denominator of the images of catastrophes depicted in novels written during the last seventy years and thereby to better understand the dynamic relations between what we know about global risks and what we subliminally dread. The latent fears and frustration which are difficult to address in a realistic mode are expressed in fantasies. Claiming that the notion of pre-TSS helps us understand contemporary psychodynamics, I look for its facets in disaster fictions written since 1950. In my opinion, the critical apparatus only recently devised by Anthropocene scholars is also a useful tool to read mid-twentieth-century nuclear holocaust fictions. The opposite is also true: re-reading older disaster novels today sheds new light on recent writings.

Thus, I subvert the critical cliché that some twentieth-century writers (H. F. Heard, Philip K. Dick, John Christopher, to name just a few) were seers prophesying climate change. I hope to demonstrate that recent climate fictions might be read as a part of a much longer tradition. The beginning of the global pre-TSS is, in my opinion, the post-war period when scientists such as Enrico Fermi made the public realise that humankind is technically capable of destroying the planet. At the same time, the memory of the atrocities of the two World Wars made it clear that people would not learn to master their in-born aggression and greed easily, which together resulted in a vicious circle of fear and helplessness. Although many people want to “save” the planet (stop the war, strive to achieve sustainability), humankind (as a species) cannot help following their instinct to fight, possess, breed, and consume all the resources. The strategy to avoid despair and the (probably futile) effort to change the future is denial and an attempt to push the awareness of danger away, out of the conscious mind. Disaster fiction allows us to unearth and anatomise global pre-TSS, and by reading the selected examples of both subgenres, I demonstrate how trauma is anticipated in the narratives by the use of flash-forwards to future calamities.

To explain the terms I use in *(Eco)Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives*, in Chapter 1, “Anticipating Disasters: Anxieties and Traumas,” I give a brief account of critical approaches to how climate change affects our psychological well-being. References to critical texts by Clive Hamilton, E. Ann Kaplan,

Michelle Bastian, and Paul Huebener provide definitions of recently named conditions such as climate depression, eco-anxiety, and pre-TSS. Since, when applying the adjective “pretraumatic,” one is committed to referencing trauma studies and, indirectly, psychoanalysis, I show how the writings of Sigmund Freud are used to elucidate the way narratives betray traumatic singularities. For this, my main sources are Roger Luckhurst’s *The Trauma Question* and E. Ann Kaplan’s *Trauma Culture*; I also refer to Freud’s essay published posthumously, “A Phylogenetic Fantasy,” where he mentions the prehistoric trauma caused by the Ice Age and speculates whether we subliminally remember it. As posttraumatic stress is closely connected to “remembering”—for instance, flashbacks of a traumatic memory—pretraumatic stress works in “anticipating”—for instance, flash-forwards of future calamities. Thus, I adapt critical insights of trauma studies to render the pretraumatic experience in narratives in which the source of trauma lies in the future rather than in the past. Chapter 2, “Writing about Disasters: Metaphors and Parables,” aims at providing the reader with relevant contexts of environmentalist debate regarding the emergence of cli-fi; I examine fables and metaphors used by critics who have tried to show the dangers of ecological catastrophes. I analyse the figurative style of Rachel Carson’s *Silent Spring* and of Carson’s followers—popular science writers who used fables and similes to make their points clear. Then, referring to the Anthropocene studies, I look at geological metaphors, primarily mineralised waste seen from the post-human perspective of a distant future as mementoes of humankind—the Freudian notion of the uncanny is the key term here as these metaphors blur the lines between dead/alive and animate/inanimate. Moreover, I address the issue of how, in periods of acute anxiety, our perception of time is altered. In the final part of the chapter, I discuss the recurrent elements of Doomsday Clock Narratives: seeing time in terms of a countdown.

Chapter 3, “Disaster Fantasies: Nuclear Holocaust Fiction and Climate Fiction,” is devoted to the disaster story tradition. Starting with early twentieth-century disaster fiction, I try to inscribe its literary offspring—nuclear holocaust novels and cli-fi—into a broader framework of literary disasters and show that disaster fiction and other non-realist genres allow the reader to identify latent fears that cannot be depicted mimetically. Similar to Gothic fiction, some of whose characteristics they share, nuclear holocaust fiction and cli-fi are indefinable, which is linked to their ability to resonate with our repressed frustrations. Following in the footsteps of David Punter and Rosemary Jackson, I apply the Freudian concept of the “return of the repressed” to show how disaster fantasies reflect the pre-TSS that characterised the periods during which they were written. Presenting the history of the two genres, I refer to the pioneering works of

scholars who studied them: Brian Aldiss, James Gunn, Jerry Määttä, Paul Brians, Daniel Cordle, Melina Pereira Savi, Axel Goodbody, and Adeline Johns-Putra.

The following three analytical chapters devoted to the literature of the mid-twentieth century, the late twentieth century, and the twenty-first century, respectively, discuss selected examples of what I call Doomsday Clock Narratives. Chapter 4, “‘Maybe It’s a Period of Grace’: Mid-Twentieth-Century Nuclear Holocaust Fiction in the Hands of Nevil Shute and Walter M. Miller,” is a reading of Miller’s *A Canticle for Leibowitz* and Shute’s *On the Beach*, both of which focus on pre-TSS, which I believe characterises their narrations. Chapter 5, “‘Imposing Fantasies on the Changing Landscape’: The Visions of John Christopher, J. G. Ballard, and George Turner,” analyses Christopher’s *The World in Winter*, Ballard’s *The Draught*, and Turner’s *The Sea and the Summer*. These novels, written before cli-fi was recognised as a separate subgenre, can be classified as Doomsday Clock Narratives: they pay the most attention to the way their protagonists react to disasters and project their pretraumas onto the landscape. Finally, Chapter 6, “‘I Wonder How Much Longer We Have’: Recent Climate Fiction from the Pens of Maggie Gee, Paolo Bacigalupi, Ruth Ozeki, and Yoko Tawada,” proposes reading the climate fictions by these authors—*The Ice People*, *A Wind-Up Girl*, *A Tale for the Time Being*, and *The Last Children of Tokyo*—as Doomsday Clock Narratives that are artistically and intellectually akin to the previous disaster novels. I demonstrate that their authors are both indebted to a century-old tradition and inventively looking for new ways of expressing the pre-TSS all generations suffer from. In my conclusion, I compare the before-mentioned three groups of disaster novels and risk a generalisation pointing to what they have in common. My findings help to explain the connections among cli-fi, nuclear fiction, and trauma theory. The anticipatory character of the Doomsday Clock image makes it an epitome of pre-TSS and allows for the tying-together of fears about nuclear apocalypse and climate change. An Anthropocene-inflicted reading of nuclear holocaust fiction can enrich trauma studies, while the psychology notion of pre-TSS can be used to link the older Doomsday Clock idea to newer ideas of eco-anxiety.

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1 Anticipating Disasters

Anxieties and Traumas

Nuclear holocaust fiction of the 1950s and 1960s, as well as cli-fi published today, all use the fantastical convention of describing imaginary disasters, and yet they resonate with current issues and threats posed to the environment, human health, and even civilisation's very survival. Living in a warming world is a nerve-racking experience: the familiar environment—plants, landscapes, weather, the changing of seasons—is being altered. Media coverage of catastrophic climate events from all over the planet adds to the feeling of anxiety, and science reports warn against the coming radical change in nature, while eco-sceptics undermine scientific findings. Paradoxically, the fierceness of climate deniers only confirms how great the emotional burden is of having to face the issue: whether we want it or not in the world of today—just like during the Cold War—the possibility of imminent disaster is looming large ahead of us. Before attempting to discuss anxieties reflected in selected nuclear holocaust and cli-fi novels, however, let us first look at how, in the early twenty-first century, critics defined and described climate-related mental conditions.

Eco-Anxiety and Pretraumatic Stress Syndrome

As early as in 2008, columnist Katherine Ellison gave a text she had written for *Frontiers in Ecology and the Environment* a telling title: “Conservation on the Couch.” *Frontiers* is published by the Ecological Society of America, and in 2008 most environmental news was already depressing; Ellison even calls it “nerve-racking.” Not surprisingly, Ellison notes the then new condition which she refers to as “eco-anxiety” and describes in her column a new line of mental health professionals, so-called eco-therapists, who believe that “as we distance ourselves from the natural world, we’re all getting, frankly, crazier.” One of them tells Ellison that “eco-anxiety” (or “eco-worry”) is a legitimate source of distress: “When someone is upset about something happening in the world, I don’t say it must be because of

your relationship with your father” (Ellison), the eco-therapist says only half in jest.

Just a few years later, the toll that climate change was taking on the human psyche had made more and more people clinically depressed, and the first to suffer were climate scientists trying to persuade the public opinion that catastrophic climate change was really happening. In “Climate Depression Is for Real. Just Ask a Scientist,” a Nobel Peace Prize winner, Professor Camille Parmesan, talked to journalist Madeleine Thomas and explained that people who are intellectually capable of processing and understanding otherwise impenetrable climatic data still cannot emotionally cope with the conclusions of their own research. This article published online by *Grist* in 2014 anticipates what “climate change blues” might bring as storms become more fierce and droughts more severe—Thomas enumerates depression, substance abuse, and anxiety. Another of Thomas’ interviewees, forensic psychiatrist Lise Van Susteren, proposes one more term to describe this condition—“pre-traumatic stress disorder ... the mental anguish that results from preparing for the worst, before it actually happens ... an intense preoccupation with thoughts we cannot get out of our minds” (Thomas). The climate scientists quoted in these interviews feel helpless; they can do nothing to reverse the catastrophic changes, and they are afraid to say how they feel because getting emotional about the issue might embolden climate deniers to reject their science.

Two years later, in 2016, eco-anxiety was becoming a fact of social life, being more and more discussed in the media, and not only climate scientists suffered from it. At that time, a blogger and self-proclaimed eco-anxiety doctor, Kate Schapira, talked to people who worried about climate change in her small booth in Burnside Park, Providence. Schapira told journalist Stephanie Taylor that one snowy day in New England she felt a dreadful surge of anxiety and suddenly realised how frustrating the ecological collapse of coral reefs was for her. The sudden despair and feeling of isolation gave her the idea that lots of people could be in need of talking about similar, apparently absurd, worries. The psychology of climate change was slowly emerging as a new sub-branch of social science. In the same year, 2016, climate reporter Tyler Hamilton wrote an article “Climate Change Is Wreaking Havoc on Our Mental Health, Experts Say” discussing eco-anxiety very seriously in reference to the findings of American Psychological Association (APA) scientists who had studied the psychosocial impacts of climate change. Hamilton claims that it is possible to suffer from anxiety about climate change without knowing it; this might encompass a vague unease about bizarre weather events, about temperature records being broken year after year, and persistent worries about the future of children add up to produce “episodes of climate-related anxiety and depression” (T. Hamilton).

Interestingly, Hamilton talks to an APA psychology professor, Robert Gifford, who remarks that climate-related anxiety provokes a fear of annihilation among contemporary people, which is uncannily similar to 1950s fears of a world-ending atomic war. For Gifford, the global psychodynamic in the second decade of the twenty-first century should be studied from a broader perspective, and since the advent of the Cold War, we have been living in the shadow of an anthropogenic global catastrophe which only periodically seemed to abate. Thus, in the 2010s the psychological impact of the looming ecological disaster was already a subject of serious research, and scientists already saw eco-anxiety as running parallel to the mid-twentieth-century fears of nuclear disaster. At that time, it was not only social media and the popular press that were interested in ecological anxieties and the return of latent end-of-the-world fears. Significantly, it was in the *Bulletin of the Atomic Scientist*, the very same journal which in 1947 created the idea of the Doomsday Clock as a way of indicating the likelihood of nuclear war, that Professor Robert Gifford (with Eva Gifford) published an article titled “The Largely Unacknowledged Impact of Climate Change on Mental Health.” Gifford and Gifford’s starting point is the observation that the coverage of climate change in the media (e.g. devastating fires, droughts, hurricanes, and floods which plague today’s world) has a profound impact on mental health. This results in “anxiety, shock, depression, grief, despair, numbness, aggression, sleep disruptions, interpersonal difficulties, acute and posttraumatic stress disorder (PTSD), substance abuse, and suicide” (Gifford and Gifford). Yet, it is an awareness of far worse impending climate disasters, coupled with the fact that ordinary people are powerless to improve the situation, that takes the gravest toll on public mental health.

Gifford and Gifford use the term “pre-traumatic stress disorder, or, moderate to extreme anxiety about a looming crisis” to name this mental condition, and they suggest that when disasters are perceived as not being natural “acts of God” but tragic events fuelled by human-made climate change, the mental suffering is far worse. The researchers also discuss the feeling of living in-between catastrophes, something described by people who have suffered from extreme weather events such as Hurricane Katrina and droughts in Australia. They claim that adolescents and individuals over the age of 65—having suffered weather-related trauma—are more likely to develop pretraumatic stress disorder (pre-TSS). Their main thesis is that climate change affects mental health “before, during, and after” its occurrence and that people suffer from pre-TSS both when they themselves have been victims of catastrophic weather events and when they learn about them from the media.

This observation, that teenagers are going to suffer from climate-related mental conditions more than adults, gained further support when in

2018 Greta Thunberg, a 15-year-old Swedish girl, started a one-student school strike by sitting in front of Sweden’s parliament to draw politicians’ attention to climate change. Soon after, psychologist Professor Marie Ojala of Orebo University in Sweden commenced researching the climate-related worries of very young people. In “Eco-Anxiety,” an article written for the *RSA Journal*, she shares her findings: young people are seriously worried about the future, and they lack a sense of empowerment and agency regarding this threat. Ojala describes their coping strategies, which she calls emotion-focused and problem-focused. In the former, teenagers try to distance themselves from their own emotions and avoid hearing about climate disasters, for example, by ignoring school lessons on this subject. In the latter, they seek the support of their parents and friends and decide to do something constructive, for example, they stop eating meat. While problem-focused strategies—Thunberg’s is the best example—are beneficial for both society and individuals, the more frequent emotion-focused strategies result in eco-anxiety and deteriorating mental health. Referring to the research of Richard Eckersley, Ojala warns against two possible social problems that eco-anxiety might lead to: “apocalyptic nihilism, which is where feelings of powerlessness take over and the individual ceases to care, instead living for the day” and “apocalyptic fundamentalism, where people try to return to more certain times, politics is framed as a contest between good and bad, and extremism rules” (Ojala). The results might be apathy, or “eco-dictatorship” and political polarisation.

Similarly, Clive Hamilton in *Requiem for a Species* mentions another reaction to the overwhelming and emotionally demanding awareness of climate change: denial. To avoid a chronic state of anxiety, individuals who know they can do nothing to prevent climate change manage the unpleasant feelings that follow (when we open ourselves to the message of climate science) by turning a blind eye. Hamilton calls this strategy “maladaptive” (C. Hamilton 121): people either choose not to listen or read about a warming world, or they admit some facts and experience some of the emotions but do it in a distorted form. Paul Huebener in *Nature’s Broken Clocks* mentions one more aspect of eco-anxiety, the crisis of identity associated with the radical changes taking place in the once-familiar seasons. The sense of bewilderment that northern nations feel on each green and warm Christmas day is just one example of the loss people feel when their life-long experience of seasonal changes in nature ceases to apply, and they have to redefine their notion of the yearly cycle. Without a reliable conceptualisation of time, people’s sense of identity is undermined and that adds to the feeling of uncertainty and anxiety.

Overall, in the second decade of the twenty-first century, the impact of climate change on public mental health was noticed and researched, and, as one can see from the texts quoted above, numerous terms were

applied to describe this condition. E. Ann Kaplan in “Is Climate-Related Pre-Traumatic Stress Syndrome a Real Condition?” enumerates solastalgia, ecophobia, ecosickness, and Anthropocene disorder and explains the difference between them. She herself opts for the name pre-TSS to describe mental health conditions described by humanities scholars and social scientists which result from climate-related environmental disasters. Kaplan chooses pre-TSS because it is a future-oriented equivalent of the familiar PTSD. She emphasises the fact that anticipation of disaster is traumatising, and that trauma studies should also encompass the wait for an apparently inescapable future experience. When the traumatic memories of past experiences and anticipation of a future repetition of them come together, pre-TSS might produce symptoms such as hallucinations about the future, flash-forwards, nightmares, and phobias. She then juxtaposes pre-TSS caused by the fear of a future war—which is easy to imagine because most people have watched documentary war footage and war films—and anticipatory anxieties about the broader environment and, specifically, climate change. The climate-pre-TSS-sufferers she describes have never been exposed to any dramatic climate catastrophes and yet they anticipate the worst and experience “nightmares, flash-forwards, panic attacks, phobias, etc.” (“Is Climate-Related Pre-Traumatic Stress Syndrome a Real Condition?”). Thus, climate change-related pre-TSS is partly fuelled by empathy and a creative imagination, with the sufferers needing to conjure up in their minds future disaster scenarios and (feeling for the victims of past calamities) be able to imagine themselves in a similar situation in the future. Kaplan notes that humanities scholars’ work on climate illness is nearly always focused on the present experience of living in the Anthropocene or else past-oriented, with scholars mourning losses in biodiversity and the extinction of wildlife species. Future-oriented thinking about the climate disaster to come needs to be included in the research of psychologists and humanities scholars: climate disaster movies are gaining popularity, and their footage of fantastical catastrophes from the future resonates in the minds of audiences. Following Kaplan’s experience, and sharing her belief in the importance of depictions of the future in popular culture, I use the term pre-TSS to describe the mental state of the narrators of the novels I discuss in the analytical chapters of this book. Other terms are used, however, when invoking critical essays of theorists who apply a different nomenclature.

Pretraumatic Stress: The Psychoanalytical Perspective

In 1983 a previously unknown paper by Sigmund Freud—called “A Phylogenetic Fantasy,” as it came to be known—was found by Ilse Grubrich-Simitis. Axel Hoffer and Peter T. Hoffer, in the foreword to

the English language edition of the paper, explain that Freud's own title, "Overview of the Transference Neuroses," was a misnomer and would undoubtedly have been changed had Freud published the paper because the essay is a divagation by Freud in the field of metabiology and metapsychology. The translators also describe the story behind its discovery: a draft of this nearly completed metapsychological paper was included in a letter to Ferenczi. Freud hoped for Ferenczi's critical response to, among other ideas, his theory of a possible correlation between mental disorders and the history of the human race, which in the past had had to rapidly adapt to threats such as "the geologic development of the earth, the Ice Age" (*A Phylogenetic Fantasy* xi). Thus, according to Freud, from the very onset of human civilisation, social tensions and environmental constraints had contributed to shape the human psyche. "The threats to survival during the Ice Age correlate with climate change" (xi), producing anxieties.

Freud's decision not to publish the essay makes it difficult to consider it a legitimate part of his oeuvre (hence the word "fantasy" in the title given to it by the translators), yet one may say that he did think about the previous worldwide climate change and how it affected human mental health. The draft of *A Phylogenetic Fantasy* was written over a century ago, much earlier than global warming began, and of course, it does not suggest that the story of a climate catastrophe and any subsequent trauma is going to repeat itself, even if the memory of the prehistoric climate disaster lingers in our unconscious minds. Yet, it is hardly surprising that some critics bring up Freud's interest in a phylogenetic trauma, claiming that the painful memory of the Ice Age is still detectable in the human psyche and has prompted the eco-anxiety many people feel today. The idea is very elegant and it allows us to see climate anxieties and pre-TSS in the context of Freud's oeuvre, thus making the writings of Sigmund Freud—the forefather of trauma studies—a convenient starting point for a discussion on how fantasising about a future climate calamity influences our mental health.

Freud's definition of trauma as a short-lasting experience, which "presents the mind with an increase of stimulus too powerful to be dealt with or worked off in the normal way" (*Introductory Lectures on Psycho-Analysis (Part III)* 275) and thus produces a permanent change, gives a succinct description of this psychiatric phenomenon. A traumatic experience is very strong, very brief, and very harmful: in reality, it happened in the past, but in the mind it is timeless and it permanently disturbs the mental life of an individual. The mind, affected by trauma in the past, is susceptible to pretrauma as if waiting for the reappearance of the harmful experience. A literary text might be read as a traumatic repetition of Freud's theorisation of traumatic memory, or as an anticipation of the trauma to come. A good example of such trauma-versus-pretrauma tension might be found in the novels of J. G. Ballard, a novelist who in his

semi-autobiographical *Kindness of Women* describes both his adolescent experience of life in a Japanese internment camp in South East Asia and his certainty that a nuclear World War III will soon wipe out all biological life on the planet. His war trauma results in a new trauma produced by the fear of the war to come, in accordance with the Freudian mechanism of involuntary repetition.

As E. Ann Kaplan notes in *Trauma Culture*, every human being reacts to a traumatic event in a highly individual manner, and one of the factors involved is the mixture of memories and fantasies of prior catastrophes. She points out that Freud, in *Studies of Hysteria*, anticipates the findings of contemporary clinicians who claim that, in the memories of traumatised patients, “other ideas including fantasies” (*Trauma Culture* 26) are attached to the traumatic event. Thus the past, the future, and imagination are all involved in the subjective experience of reliving trauma and expecting its reoccurrence in the future: haunting memories mingle with fantasies. In *The Trauma Question*, Roger Luckhurst discusses how, in the writings of Freud devoted to trauma and coming from three distinct periods of his career, the role of reminiscing changes (7–8). From viewing traumatic hysteria as a disturbance of memory, to seeing trauma as the re-emergence of—mostly sexual—painful early childhood memories in adult life, to the discussion of an “obsessive return in waking thoughts and nightmares to the pain and terror of traumatic battle scenes” (8), Freud redefines trauma each time while repeating the axiom that people who suffer hysteria suffer mostly from reminiscences. The third approach to trauma described in Freud’s famous essay “Beyond the Pleasure Principle,” written after World War I, tackles not the private experience of one’s personal life and sexual development but the external situation of being sent to the battlefield. Traumatised soldiers participated in the war in a manner difficult to fathom to civilians, their experience being impossible to render into words and their trauma deprived them from an ability to communicate—even with themselves. Instead of narrative coherence, their memories are dissociated and they compulsively relive the event in their fantasies.

Cathy Caruth (writing a century after Freud and with access to recent research in neuroscience that he could not even begin to imagine) praises his intuition that it is because the traumatic experience cannot be given meaning via words that it haunts the victim as timeless fantasies. She calls trauma “a response, sometimes delayed, to an overwhelming event or set of events, which takes the form of repeated, intrusive hallucinations, dreams, thoughts or behaviors stemming from the event” (Caruth 4–5), underlining the element played by fantasies when reliving trauma. Dreams bring flash-forwards of the event, and hallucinations bring forth the feeling of experiencing fragments of memories in the moment, now; neither are coherent nor parts of cause-and-effect narrative chains. Caruth discusses

what happens when the traumatic event took place in the past and was objectively real, even if its memories are distorted beyond recognition for everybody but the sufferer. If we locate the traumatic event in the future—and in the form of an imagined but inescapable catastrophe—her definition may help to explain pre-TSS in eco-anxiety sufferers. Cli-fi texts provide a narrative framework to encompass an anticipatory response to the coming overwhelming suffering: flashes of imagined calamities, and situations imagined on the basis of climate disaster footage as well as scenes recalled from disaster movies.

Interestingly, Freud did not set out to write the theory of trauma but, as E. Ann Kaplan notes, merely attempted to explain processes seen in hysteria which he observed in middle-class women who had suffered sexual abuse in their childhood, and later in shell-shocked soldiers. Thus, the concept emerges from his writings over years; only in retrospect can it be theorised as a two-pronged phenomenon, with trauma involving a temporal duality: the suffering comes from the continuous present imagining of something which happened in the past. Additionally, what the patients remember is coloured by their imagination: “Freud had insisted from the start on the presence of fantasy, the unconscious and present conditions as inevitably implicated in traumatic memories” (*Trauma Culture* 36). Luckhurst sums up this observation by claiming “hysteria was psychological because it was a disease of memory” (46) and explains that trauma distorts causality and chronology: “ordinary causality can be thrown into reverse by a traumatic impact, whose affect is only registered long after the first shock and which can retrospectively rewrite life narrative” (81). Suffering from persistent hallucinations, dreams, and flashbacks might last years, while the recalled event lasted mere minutes. This temporal disproportion also characterises pre-TSS; anticipating disasters, imagining them, living through premonitions of them, and fantasising about them is an endless, life-long process. The metaphor of a countdown depicts this discrepancy elegantly: point zero is singular and momentary, looming somewhere in the future, yet approaching it seemingly takes forever.

The context of Freudian writings on hysteria is relevant to the discussion of pre-TSS for one more reason: it was the atrocities of World War I that made him rework his concepts allowing for a focus on soldiers. Freud, in the already-mentioned post-World War I essay “Beyond the Pleasure Principle,” coins the term “the death instinct” to describe humans’ propensity for self-destruction. Anthropogenic disasters cause severe psychic pain, making people doubt the human race and redefining the notion of humanity. Today, civilisation faces the question of whether it is possible to safeguard every single “life against modes of destruction, including the kinds of destruction we ourselves unleash” (Butler 72). Freud’s remarks on trauma and modern destructiveness strike one as relevant here. Judith

Butler notices in *The Force of Non-violence* that technological development over recent centuries has not made people violent but has simply allowed their in-born destructiveness to surface. Frustration and guilt produced by the awareness that human destructiveness has no limits and that now we are capable of planetary destruction have resulted in pre-TSS: flash-forwards to a ruined and sterile earth in the future are as haunting as past memories of the trenches. In these days of political and ecological crisis, the famous Freudian claim that “hysterics suffer mostly from reminiscence” might be rephrased as “pre-TSS patients suffer mostly from premonition.” Looking at the world around us—landscapes, flora, and fauna—but simultaneously seeing an arid postapocalyptic deadness is a horror-like experience which brings to mind another of Freud’s late essays, “The Uncanny.” In this paper, Freud traces the origins of the feeling of horror back to being faced with an embodiment of contradiction: for example, our own double, or an undead vampire. The uncertainty as to whether what we see is dead or alive, benign or harmful, breeds trauma, which Freud discusses referring, among other contexts, to literary fiction.

One of Freud’s most important discoveries is that humans are capable of projecting their inner feelings and fears onto inanimate objects or landscapes. Considering these outer phenomena to be actual sources of emotions (which, in fact, come from within our unconscious minds) explains how eco-anxiety is born. Seeing premonitions of a future dead world while we are surrounded by still living nature, imagining the mineralised residua of familiar objects both involve experiencing the uncanny blurring of the real and imaginary, the animate and inanimate. Thus, paradoxically, pre-TSS sufferers are focused on a future calamity but experience repressed memories from aeons ago, dating back to a phase when these distinctions were not made.

Interestingly, in the last part of “The Uncanny,” Freud discusses the quite common and yet disturbing feeling that things are repeating themselves. The repetitions are experienced as something coming to us from the outside world. Closing the person who experiences this phenomenon in a vicious circle of iteration, the persistent repetition of flashbacks or flash-forwards trauma (and pre-TSS) produces a feeling of the uncanny. In the case of end-of-the-world anxieties, persistent hallucinations depicting an ecologically ruined earth of the future evoke one more aspect of the uncanny: the animate–inanimate opposition is blurred. Concentrating on geology, the earth’s strata of compressed industrial waste—the mineralised leftovers of today’s world—results in a horror-like experience of seeing today’s undead planet, a premonition of its postapocalyptic double. Timothy Morton, in *The Ecological Thought*, calls Freud’s “The Uncanny” essential for describing how it feels to live during the Anthropocene. Looking at the world with ecological awareness is, in his opinion, uncanny: “as if we were

seeing something we shouldn't be seeing, as if we realize we were caught in something" (58). That repeated "as if" points to the uncertain, weird sensation of perceiving things that are forbidden, drastic, nerve-wracking. This is the feeling of waking up in a haunted house, of opening a crypt and realising the occupant is not quite dead. Thus, just like Allan Rae notices in "The Uncanny, the Weird, and the Eerie," it is fantasy literature that allows one to depict stressors of life in the Anthropocene. Discussing the fiction of China Miéville, he points to "the contradictory, heterogeneous, yet paradoxically entwined modalities of the uncanny, weird, and eerie in order to aestheticize the overwhelming character of the Anthropocene" (111). The example Rae gives is of a story about the sudden appearance of bizarre icebergs floating in the sky above London, which he discusses in terms of a Freudian return of the repressed. The epitome of climate change, these icebergs we destroyed and prefer not to think about make their triumphant uncanny return: straight and raw from the unconscious.

The last example of how weird or speculative fiction can render the uncanny return of the repressed in these days of climate change is interesting for one more reason: it suggests the Freudian interpretation of ecological denial. The already-mentioned *Requiem for a Species* by Clive Hamilton may be considered a book-long analysis of how and why the human race resists the truth about the approaching climate catastrophe, enumerating numerous facets of our denial (96, 98, 116, 119, 120, 122, 123, 134, 126, 212, 215, 219). The passage below is a good example of his approach to this phenomenon—denial is presented as a "healthy" response to cognitive dissonance: people only pay attention to what agrees with their worldview:

If humans are rational creatures, we would expect that as the scientific evidence confirming human-induced global warming has become overwhelming, the deniers would adjust their beliefs to accommodate the facts. Yet they have become more vehement in their attacks on climate scientists, environmentalists and anyone who accepts the evidence for global warming. They have ways of explaining away the facts: scientists distorted their results to obtain more research funding; other scientists in possession of the truth have been silenced; governments have caved in to pressure from environmentalists who are hell-bent on destroying the free-market system.

(96–97)

The compulsion to deny the unpleasant truth—even by means of creating improbable conspiracies—allows deniers to avoid experiencing the stress of facing reality. Their attempt to silence ecologists is uncannily similar to how trauma victims persistently avoid stimuli associated with the painful event which can "range from avoidance of thoughts or

feelings related to the event to a general sense of emotional numbing to the total absence of recall of the significant event” (Luckhurst 1). Thus, experiencing trauma is a twofold, self-contradictory process, and “the first cluster of symptoms” (1) relate to the ways in which trauma is constantly re-experienced, and the second to how it is avoided. The tension created by this duality can also be traced in the pre-TSS sufferers’ experience on the day of a climate change-related event: one may decide not to pay heed to ecological warnings, not to think about the suffering and tragedy involved in climate catastrophe, not to alter one’s lifestyle and consumerist choices. And yet, the repressed truth haunts contemporary culture, and it is the popular fantastic genres that can stage the catastrophic scenarios in which what we prefer not to recall is exposed in painful detail. Thanks to Freud’s notion of the uncanny and his theories concerning trauma involuntarily repeating and the death instinct, the latent meaning of such texts can be grasped.

The iconography of the Domsday Clock points to the anticipatory nature of (eco)anxiety and resonates with human fears of a prospective nuclear holocaust or the prospective climate disaster alike. Pre-TSS is a mental condition of people obsessively anticipating future calamities and for whom a disastrous future seems more real than the pretraumatic present. Similar mechanisms were at work during the Cold War period when Domsday Clocks were devised. Today, now that the impact of climate change on the human psyche is researched academically, Anthropocene scholars refer to this psychology-related notion in order to study existential threats to life on an endangered planet. As this chapter has shown, trauma studies offer methodologies and concepts which help to understand the psychological reactions people experience today. Adapting a psychoanalytical perspective allows one to describe the mechanism of denial and also to identify the clusters of symptoms that victims suffer as pre-TSS. Such psychological awareness helps when discussing both nuclear holocaust fiction and climate fiction, as the analytical chapters of this book will strive to prove. Yet, the opposite is also true; trauma studies can benefit from disaster fiction as stories by narrators awaiting (eco)disaster are case studies of how pre-TSS works.

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2 Writing about Disasters

Metaphors and Parables

Fantasy literature, whose authors are often interested in planetary-scale issues (other globes with their unique biodiversity, the earth in an alternative universe, or in a distant future), offers up possibilities to talk about alien ecologies in a way which appeals to the imagination. As early as in 1965, Frank Herbert famously claimed in his classic saga *Dune* that ecology is the science of understanding consequences. Although *Dune* is set on faraway planets, the book is inspired by terrestrial desert landscapes and indigenous peoples who learnt to live amidst aridity, and thus Herbert was making a point about human subjectivity, nature, and political awareness. In the following decades, texts devoted to dangers facing the human environment and an ecological crisis appeared in popular science series and the mainstream press, while more and more writers of speculative fiction published books devoted to ecological issues: climate, anthropogenic, and natural disasters, terraforming, and so on. Simultaneously, well-written popular science publications spread imagination-spurring images of polluted environments—the most famous of which is Rachel Carson’s fable of a silent spring; and fiction writers projected some of these onto fantastic landscapes. The mimetic and the imagined coexist in ecological discourse: the ability to imagine and empathise is considered necessary to avert climate catastrophe. Sherri Goodman in the foreword to *Disaster Alley. Climate Change, Conflicts and Risks* famously claims that climate change is a serious threat and may result in the obliteration of human civilisation because of our catastrophic failure of imagination. In order to make readers realise what environmental catastrophes are really like, popular science and disaster fiction writers devise poignant narrative strategies. Thus, it is fables, metaphors, similes, and images that characterise environmental discourse in fiction and non-fiction, and one of the major sources of vehicles for metaphors is geology.

Geological Metaphors

At the turn of the millennium, Paul Crutzen published in *Nature* a seminal article titled “Geology of Mankind” where he claims that the term Anthropocene should be applied “to the present, in many ways human-dominated, geological epoch, supplementing the Holocene—the warm period of the past 10–12 millennia” (23). In retrospect his idea is important for a number of reasons. The term Anthropocene derives from the Greek word for “a human being,” and its similarity to the geological term Holocene makes it a unique blend of the humanist and the scientific way of looking at the world. Moreover, Crutzen introduces huge time scales to humanist discourse; his thesis broadens the imagination by inviting the reader to look at today’s culture from the perspective of the distant future, and, last but not least, it kicked off the widespread use of stratigraphy as a metaphor for humanity’s impact on the planet. Today, to write about the Anthropocene in the context of culture and civilisation means underlining humans’ responsibility for the planet and the need to rethink the future consequences of what we do today. On the other hand, reading geologists’ texts is a mind-bending experience: adopting a vantage point based in the very distant future shows our hubris. Instead of being a major factor shaping the earth’s strata, humanity’s handiwork may very well soon disintegrate in the earth’s crust, making our civilisation just a short and pitiful episode in the history of the planet. In one Anthropocene literary classic, *The Earth after Us*, Zalesiewicz is painfully honest claiming that if the human race ever disappears, it will leave behind only giant heaps of rubble and waste.

Yet, the metaphoric term Anthropocene is often contested not because it exaggerates humanity’s impact on natural history but because it implies that all people in all times have contributed to ecological catastrophes, as if humanity was a planet-destroying species. Thus, some critics have proposed other terms to refer to this period: in 2015 Donna Haraway coined the neologisms *Capitalocene*, *Plantationocene*, and *Chthulucene*, the first of which has come to be widely used. This proliferation of terms-cum-metaphors points to geology as a powerful source of images; by constructing them, we create imagination-stirring stories and are able to criticise what Jane Bennet calls “our earth-destroying fantasies of conquest and consumption” (ix). In *Staying with the Trouble: Making Kin in the Chthulucene*, Haraway underlines the power of a creative imagination and fantasy literature which can render the sensation of living in the epoch she calls the *Chthulucene*. In contrast to the Anthropocene—the term which, in her opinion, is based on the contrast of what is and what will be—the *Chthulucene* is about the ongoingness of nature, which was, is, and always will be. It is through empathy and metaphors that we can reconnect to the

world, and it is “SF” (the acronym which she explains in multiple ways as meaning not just science fiction but also speculative feminism, science fantasy, speculative fabulation, and science fact) that can help us to communicate our feelings.

By seeing patterns and devising metaphors, the complexity of life in a warming world can be conveyed to others; moreover, Haraway manages to transform the deadness of geology (a science that often describes the mineralised remnants of once-living things) by writing about “possible finite flourishing.” For eco-feminist critic Jane Bennet, the Anthropocene provides an opportunity “to rethink things” (viii) and establish new kinds of empathic relations with living organisms and with what she calls “vibrant matter.” And it is matter: fossils of ammonites, mineralised mammoth tusks, insects immobilised in amber that tell “the first apocalyptic stories ever read ... written by the earth” (Elmore 49). Therefore, the blurring of the animate–inanimate distinction reminds us of the Freudian uncanny and points to the literariness of Anthropocene-inspired criticism. Mineralised waste as metaphors for human greatness and human folly are characteristic for its style. A good example is the beginning of Michelle Bastian and Thom van Dooren’s “Editorial Preface” to the volume *The New Immortals: Immortality and Infinitude in the Anthropocene*, where the authors describe plastic, radioactive waste, and chemical pollutants—“with their effects promising to circulate through air, water, rock and flesh for untold millions of years”—as the “new immortals.” These awesome entities are like capricious deities atop Mount Olympus. In the few lines that open their volume, Bastian and Dooren attempt to create some kind of new pantheon of divine phenomena, a shadowy counterpart to Bennet’s “vibrant matter.” Bennet suggests shifting our attention from our human experience of things to the things themselves, as well as building a network of relations between living organisms and their internal and external surroundings: from cells to metal. This kind of relatedness allows us to perceive the vitality of the whole environment and feel an integral part of it. Bastian and Dooren point to humanity’s troubled relations with divine beings, relations which are based on unequal power structures, using such phrases as “insistent demands,” “unpredictable and dangerous beings,” and “wield power over life and death.” What the “new immortals” and “vibrant matter” do have in common is renegotiating the notions of animate and inanimate, dead/artificial and alive, and yet, though Bennet’s text proposes a rethinking of human-made apparent contradictions, Bastian and Dooren evoke the Freudian uncanny: the inanimate leftovers we neglected become morbid and are horribly undead, just like vampires. The above-mentioned passage is built on various contradictions, the most important of which are antiquity/the Anthropocene, divine/human, past/future, benign/dangerous, and in each case the juxtaposition results in

apprehension. In antiquity, humans used to fear the divine powers of heaven and earth, which they did not understand and thus personified as capricious and distant divinities. Those days are long gone, but, in the opinion of Bastian and Dooren, unexpectedly we have realised that we are on the cusp of an epoch marked by the uncanny repetition of the old bondage when humans were helpless in the hands of capricious powers. Human-made divinities now have their Anthropocene equivalents in human-made waste, which is also immortal, harmful to its creators, and invincible. The aeons of the distant past marked by prehistoric beliefs—when natural phenomena were gods—ended in a short period of (apparent) human control over the environment, the short “now” moment of rationality. Yet, due to human folly, people are entering a new vastness: a future which is set to be plagued by their own poisonous creations.

What *The New Immortals* does is tell a story, narrate our past and our future with the help of metaphors and cultural references. The Anthropocene becomes graspable thanks to stories, and Claire Colebrook in *Death of the PostHuman* explains that geology plays a vital part in humans’ ability to picture themselves in time. Thanks to geology we can identify traces of distant epochs and prehistoric extinctions which we are able to imagine, and therefore we can position ourselves on a vast geological scale. Moreover, understanding a distant, non-human past by studying geological layers allows us to imagine the earth after our own extinction. The proposition that the planet, after our own demise, will still be able to narrate history (with our human epoch being just a small blip in the planet’s past) is in itself food for the imagination and a potential source of stories.

Thinking up such stories about humanity’s extinction, adorning them with references to geology, and narrating the past from the vantage point of a distant future are a collective enterprise and an effort to re-establish humanity’s place on a planetary timescale. In Chapter 1, I claimed that an awareness of approaching catastrophic climate changes has resulted in the pre-TSS experienced by many people; therefore, anticipating and narrating disaster may be viewed as a collective way of working through it. In *The Trauma Question*, Roger Luckhurst notes that “trauma psychology frequently resorts to the Gothic or supernatural to articulate post-traumatic effects” (98), and he discusses examples of what he calls trauma fiction taken from the popular fantasy genre. His brilliant presentation of Gothic stories by Stephen King is based on the assumption that the suppressed traumatic memories of King’s protagonists cannot be laid to rest and keep coming back in flashbacks. This uncanny return of the repressed—memories come back disguised as nightmares, or psychotic hallucinations—violates the linear time of narration; the protagonists are arrested in the past; and in the narrative, “disorders of emplotment” mimic “traumatic effects” (Luckhurst 88). Luckhurst cites research conducted by

the American Psychiatric Association to back up his theses: according to the psychiatrists he quotes, the intrusive symptoms of posttraumatic stress include intrusive images, dreams and nightmares (147), and flashbacks (183), just like the narrative devices used in trauma narratives.

I am going to come back to the above-mentioned ideas in the analytic chapters of this book: nuclear holocaust fiction and cli-fi are literary genres focused on the (near) future and, in my opinion, exploit pretraumatic stress. Thus, I will show that similar but reversed devices are at work in these texts: in some cases, protagonists experience flash-forwards to catastrophic future calamities and are obsessively living the future and neglecting the present moment, while some other narratives are themselves iterative anticipations of disaster. The timeline of the narration is not linear; very often the focalisers know they are living between catastrophes and are not only re-experiencing a calamity which has already happened but also anticipating the final, future catastrophe in flash-forwards. They are haunted by dissociated images which sometimes originate in documentaries and forecasts (e.g. footage of Hiroshima and Nagasaki casualties, napalmed villages in the jungle, koalas suffering in the burning bush, plastic-strewn beaches), and their psychological reaction to what they learn about civilisation's hazards is disjunctive. What they find uncanny in the present they project into the future, but because they believe this future is bound to catch up with humans, they do not get rid of the stressful stimuli. Following Freud's depiction of the unconscious as not unitary but conflicted, it can be said that this internal confusion results in instinctual repetition of the catastrophic scenario, which characterises both nuclear holocaust fiction and cli-fi. Just like trauma narratives might be read as traumatic repetitions of Freud's theorisation of traumatic memory, the Domsday Clock Narratives are traumatic iterations of the calamity to come. And again, the recent research conducted by the American Psychiatric Association on the symptoms of pre-TSS can help in demonstrating how these narratives work.

The trauma which pre-TSS sufferers experience is related to the media: although it is true that some of the sufferers saw action during World War II (or lived through traumatic weather events), many of them await a nuclear war (or are now persuaded that a climate catastrophe is going to take place in their own lifetime) merely because of what they have learned second-hand. It is by being exposed to traumatic images, which the spectators consider to be genuine and which they believe to show calamities doomed to be repeated, that the condition is acquired. In this respect, in the age of climate change, mediated images regain their power to impact the viewer's psyche, something which was believed to have been lost in the last few decades of the twentieth century. In her 1977 essay, *On Photography*, Susan Sontag feared that viewers who repetitively watch mediated traumatic

visual material cease to emotionally react to violence: continuous exposure may have a numbing effect. At roughly the same time, Jean Baudrillard was working on his seminal book of essays, *Simulacra and Simulation*, where he claims that, in an age of omnipresent TV screens, the real and the unreal cease to exist and are replaced by a mediated experience and images which are neither true nor false because all they imitate is other images. “Simulation is no longer that of a territory, a referential being, or a substance. It is the generation by models of a real without origin or reality: a hyperreal” (Baudrillard 1). According to Baudrillard, in a hyperreal world, simulacra—models preceding originals—obliterate the distinction between fact and fiction, and violent images become devoid of a referent and turn into abstraction. Baudrillard discusses numerous aspects of the contemporary mediascape, among them television, which he calls (following Marshall McLuhan) a cool medium turning people into indifferent spectators and not at all participants in the violence on screen. Thus, long after the height of the Cold War and yet before climate change made itself conspicuous, media images were considered to have lost their impact on human emotions.

Yet, in the classics he wrote in the 1960s, McLuhan links the anxieties mid-twentieth-century people felt with the fact that they inhabited a new “environment,” a contemporary mediascape spreading persuasive yet disturbing images which “leave no part of us untouched, unaffected, unaltered,” and he adds that “any understanding of social and cultural change is impossible without a knowledge of the way media work as environments” (26). The experience of watching trauma victims on screen is far more common than being bystanders or living near the spot where an awful event happened. That is why E. Ann Kaplan in *Trauma Culture* advises cultural studies scholars to focus on mediatised trauma. Kaplan emphasises that the personal experience of having lived through childhood trauma during World War II makes her grown-up self susceptible to getting traumatised by images of terrorist attacks on screen. This remark confirms other observations that pre-TSS sufferers feel they are living between catastrophes; it is the memory of the traumatic past that makes them apprehensive when they imagine what will happen. Yet, for Kaplan, nowadays most people, most of the time, experience trauma second-hand via the media, and that is what they think of when they are exposed to trauma fiction. She considers vicarious trauma an important aspect of contemporary culture and one that should not be omitted in humanities trauma research on “collective or cultural trauma” (Kaplan 66). Kaplan also notes that “being vicariously traumatized invites members of society to confront, rather than conceal, catastrophes” (87), which is an important point when discussing representations of nuclear holocaust or climate catastrophe. In an age of anxiety when people feel threatened by the prospects of

calamities, be they wars, terrorist attacks, or catastrophic weather events, violent footage appeals to fear as well as empathy.

Parables of Nature and Symbolic Timepieces

Nuclear holocaust fiction and cli-fi are instances of the well-established literary genre of disaster fiction, which I am going to discuss in Chapter 3. Nevertheless, they also are indebted to another imaginative tradition—parables devised to make the reader emotionally relate to nature. Before moving on, we need to look at the most famous of such parables: the “silent spring.” The narrative built around this single emotionally charged image shows that, although the term Anthropocene was coined in 2000, and the term “global warming,” according to Britannica.com, was used for the first time only in 1988, environmental awareness (and stories reflecting it) began a few decades earlier. As some critics have noted, mid-twentieth-century novels describing climate catastrophes are not feats of prophetic vision but evidence that British and American intellectuals at that time were already aware of the looming ecological danger.

Rachel Carson’s book on the effects of pesticide use in the United States, *Silent Spring*, published in 1962, is a cornerstone of the environmentalist debate: it commenced a new way of thinking about rural wildlife, human responsibility for nature, and the possibly bleak future. Moreover, as Clive Hamilton notes in *The Sixth Extinction*, the “instant and ferocious” (35) response from the chemical industry and government who called Carson a “hysterical woman” was the prime example of ecological denial. The emotional reaction of the establishment to a brief book about pollutants—and its subsequent success and elevation to the position of a classic—results from the appeal of Carson’s prose. *Silent Spring* is not only well-researched but also very well-written, and the skilful use of images and parables (fables, as Carson herself calls this literary device) makes her text uncannily relatable.

The first chapter, “A Fable for Tomorrow,” gives the book its narrative frame and introduces the eponymous image. Carson starts by invoking the American pastoral tradition of idealizing the rural life in American towns surrounded by temperate landscapes of breath-taking beauty. She paints the picture of a beautiful small town surrounded by fields and orchards where settlers live happily among pines, oak trees, maples, birches and flowers, birds, and foxes. The harmony of life “in the heart of America” (Carson 1) is emphasised in the first line of the book; Carson’s text’s appeal to the senses and description of the abundance of the countryside recalls the myth of Mother Nature as bountiful and benign. The text of this fable is full of enumerations: “laurel, viburnum and alder, great ferns and wildflowers” (1) adorn the countryside, and a litany of birds and fish

inhabiting the place. Halfway through the chapter we learn that this pastoral image seemed to last forever; the seasons kept changing in their yearly cycle but nature was timeless and the settlers with their houses, wells, and barns fitted in. Yet, the subsequent paragraph begins with a turn marked by the word “then” after which enumeration of various anthropogenic plagues—“a strange blight,” “some evil spell,” “mysterious maladies,” “sickened and died,” “a shadow of death”—depicts the end of the pastoral ideal. People, plants, and animals suffer, and the climax of disaster comes in “a spring without voices.” In “a strange stillness,” a few “moribund” last birds “trembled violently” and “could not fly.” The last enumeration is a death list of extinct species: “robins, catbirds, doves, jays, wrens, and scores of other birds” (Carson 2), which contrasts with the initial descriptions of joyful multitudes of life. The remaining paragraphs of the fable are short and based on a similar contrast: images of a bountiful past with fruit, young animals, bees, and fish versus a polluted, lifeless present. The last passage of the fable—“No witchcraft, no enemy action had silenced the rebirth of new life in this stricken world. The people had done it themselves” (Carson 2)—serves as a warning for America at large. The coda to the chapter explains how the town from this fable is similar to thousand towns in the whole world and formulates the question *Silent Spring*, with its research on the side effects of pesticide use, attempts to answer, namely, why spring in American towns has recently grown silent. The image of the “silent spring” should be kept in mind while reading the subsequent chapters of Carson’s book: some aspects of the ecological catastrophe of the imagined region are supported by real data from real places collected by the author. Thus, we see thousands of dead birds—“fish-eating species—herons, pelicans, grebes, gulls” (55)—picked up by the refuge staff at Tule Lake. In the eighth chapter, “And No Birds Sing,” we read an authentic letter to ornithologists written by people who realised that the birds in their neighbourhood have been killed off. In this letter, just like in “A Fable for Tomorrow,” enumerations of living birds—“a steady stream of cardinals, chickadees, downies and nuthatches” (100)—are contrasted with lists of death, of abandoned nests, and silent grooves. This narrative strategy is also used in the presentation of polluted waters in the ninth chapter, “Rivers of Death,” with its once abundant and now dying fish.

Thus, Carson’s narrator leads the readers—most of whom before reading the book did not know much about pollution—through well-designed narrative stages. First, they read a simple, emotionally charged fable that echoes the traditions they know: mythic stories of America as a Land of Promise, a utopian vision of a land flowing with milk and honey, and sad stories of human greed and folly. Factual chapters devoted to ecological catastrophes and the results of dramatic research follow, and by embedded

fable-like illustrations of particular instances of wildlife poisoning, the chapters send us back to the initial image and suggest that the nightmare of the silent spring is gradually coming true. The similarities of stylistic devices used in the fable and the research reports force the readers to acknowledge the sad realities of the ecological crisis and react emotionally. Moreover, Carson's subsequent factual chapters describe in turn hecatombs of birds and fish, diverse diseases of mammals, and, eventually, the hazards to human health—particularly the reproductive system. From sad but distant small-scale ecological catastrophes to global, human life-threatening disasters, the book evokes first pity, then anxiety and panic: "For mankind as a whole, a possession infinitely more valuable than individual life is our genetic heritage, our link with past and future" (Carson 185). The tone is grave as the narrator presents universal truths and talks about the whole planet, the whole species, and the whole of history. This discourse continues in the final three chapters of the book, which are no longer about particular places but rather present general conclusions. They are tellingly titled "Nature Fights Back," "The Rumbblings of an Avalanche," and "The Other Road." Together they make a conclusive finale and a modern equivalent of a traditional tale's moral. Human myopia and hubris are stated, and the main precept is formulated: humans are but a tiny part of a much larger and older system; we are able to destroy the bounty and beauty which we were given to live in, but if we do so, we will also destroy ourselves and a new post-human balance will begin. The very final chapter, "The Other Road," by alluding to Frost's famous poem, gives us hope but also serves a didactic function—it tells us to mend our ways. Overall, by creating the silent spring parable and a book-long essay based on its application to contemporary problems, Carson managed to incept anxiety into a consumerist culture. *Silent Spring* is meant to create pre-TSS-like feelings and make us act. It is its combination of logic and emotions, fables and data that makes the book relatable and readable and which, on top of other things, introduces into environmentalist discourse the imaginative tradition of emotionally charged parables.

In the 1970s, James Lovelock wrote *Gaia. A New Look at Life on Earth* in which, to persuade people that we need "to love and respect the Earth with the same intensity that we give to our families and friends" (2), he depicts the eponymous Gaia, a vast being and the largest living creature on the planet named after the Greek goddess and with allusions to the figure of the Mother Nature. He claims that the biosphere of our planet controls and regulates the physical conditions on the globe to favour the flourishing of life. In the preface to a later edition, Lovelock enumerates at least three aspects of Gaia that he discovered in the long years of his research. Firstly, as a scientist involved with NASA and working with the programme to explore other planets, he started to compare Mars and Venus with Earth

and concluded that only the latter “was a planet with apparently the strange property of keeping itself always a fit and comfortable place for living things to inhabit” (Lovelock 1). There was also an environmentalist facet of his research, and he soon remembers that “Rachel Carson had given us cause to worry” (1). Dropping Carson’s name in the preface to *Gaia* is very telling; Lovelock’s vision of nature is under the influence of *Silent Spring* as far as narrative strategy is concerned. It is the propensity for allegories and allusions to ancient myths and traditional fables that gives his essay a narrative frame. He adds that the very title *Gaia* (after the Greek goddess of the earth) came from his friend and near neighbour, William Golding. The third aspect of his research is its imaginative style, which is free of constraints: he follows in the steps of Carson in a far more radical way, and his friendship with the author of *Lord of the Flies*, a bitter allegorical dystopia devoted to the study of human nature, seems far from accidental.

A few years later, Lynn Margulis wrote *The Symbiotic Planet: A New Look at Evolution*, in which she modifies Lovelock’s thesis to describe the endosymbiosis theory. Already on the page 1 Margulis shows her scientist’s reluctance to walk the allegoric path of myths and parables in environmental studies while at the same time admitting that she is under the spell of Carson and Lovelock. This tradition is still thriving: parables and allegorical pictures of the biosphere (or parts thereof) adorn books devoted to Anthropocene studies; for example, *The Uninhabitable Earth* by David Wallace-Wells shows us the ferocious, hot planet of our dystopian and all too probable future, and Terry Gifford calls for “a mature environmental aesthetics” (170), a style in which it is possible to describe the reality of the Anthropocene. These parables and fables are created to illustrate how the biosphere or its parts work. The focus of these fables is space: an idealised American town with its neighbourhood, a lake, a river, or the whole planet, and although the locations change in time, the very nature of temporality is not questioned. Yet, one of the key issues of environmentalist debate is the need for “a theory of temporality that specifies the location of the ecocritic in time” (Anderson 35). Time, history, and future are epitomised and presented to the readers symbolically (a road, a clock, a turtle) or in parabolic stories, which in turn influence fiction writers.

As I already pointed out in the Introduction, the awareness that natural cycles have been destroyed and that human time is slowly coming to its end is traumatising for pre-TSS victims. Swiftly passing human time is conceptualised as a Doomsday Clock, the symbolic image first created in 1947 by the *Bulletin of the Atomic Scientists* (BAS) and, half a century later, used again by BAS to depict the dangers of drastic climate change. Similarly, in Doomsday Clock Narratives, instead of imagining time as a road leading ahead, narrators tend to think in terms of how much time is left for the human race and build their

stories around the idea of counting down the remaining moments for both humankind and the cosmos. Yet, it is by no means the only way of dealing with temporality in the days of looming disaster, a “fatal confusion about the nature of time and space” (McKibben 7). Some authors refer to non-Western traditions of picturing time, and some call for new temporal frameworks.

“If you understand time as only passing, then you do not understand the time being,” reads the Buddhist definition of Uji (Being-Time) used by Ruth Ozeki as a chapter motto in her cli-fi novel *A Tale for the Time Being*, meaning that “every being that exists in the entire world is linked together as moments in time, and at the same time they exist as individual moments of time” (quoted in Ozeki 259). The idea that time should not be considered a separate dimension characteristic of human perception and that human history and nature should not be imagined as timeless recurs in recent non-fiction devoted to the ecological crisis. Paul Huebener, in *Nature’s Broken Clocks*, identifies and challenges “representations of nature’s time as slow, frozen, or empty” (131). For example, he deconstructs advertisements of recreational vehicles that are based on a contrast between the hectic human clock-time that characterises urban life and the laid-back comforts of holidays in the bosom of timeless nature. He agrees with McKibben that similar clichés result in confusion and maim environmentalist projects. McKibben claims that “our culture has placed our own lives on a demonic fast-forward, we imagine that the Earth must work on some other time-scale,” and “the long slow accretion of epochs—the Jurassic, the Cretaceous, the Pleistocene—lulls us into imagining that the physical world offers us an essentially stable background against which we can run our race” (7). Thus, two binary oppositions are reinforced: nature versus culture; the measured time of civilisation and historical processes versus the unchanging material world. Now, when the climate is visibly changing and nature seems to be accelerating, we are forced to rethink time and “[o]ur conventions for coordinating ourselves” (Bastian 24). What Bastian offers is a way to conceptualise new kinds of clocks: not mechanical timepieces meant to measure arbitrarily defined units of time, but devices which signal “change in order for its users to maintain an awareness of, and thus be able to coordinate themselves with, what is significant to them” (31). Examples she gives vary; for example, looking at a leatherback turtle, an apparently ageless creature with 100 million years of species history, we may feel “a sense of continuity with a deep past” (42). The turtle is this new kind of clock; it makes us aware of past epochs, our kinship with evolutionarily older creatures, the need to protect their nesting sites, and the climate conditions they can tolerate. The *BAS* Doomsday Clock is also included in this definition: it makes us aware of changes in what is significant to us and the chances of humankind’s survival. She points to similar “awareness-raising” clocks in the days of climate change, for example, the One Hundred

Months Clock which was devised by the The New Economics Foundation in August 2008 and which “indicates the number of months ... still available for us to take action to avoid the Earth’s average surface temperature rising above 2°C” (38).

The One Hundred Months and the Doomsday Clock are timepieces for today; they no longer reinforce the belief that time is absolute, linear, and objective, but underline what is crucial for us. In *The Politics of Nature*, Bruno Latour writes that actants are anything that “modify other actors through a series of ... actions” (75), and the clocks Bastian describes are timepieces designed for actants that tell the time agency left to us. Since the pre-TSS victims suffer from, among other things, a feeling of helplessness and a lack of agency, the parables of a dying nature and these symbolic timepieces add to their anxiety. Disaster fiction explores these emotions.

The Doomsday Clock image, which I consider the key to this poetics of disaster, is appealing for a number of reasons. Firstly, it is emotionally charged and it evokes fearful memories of the Cold War, which some readers experienced first-hand and others via books and movies. Secondly, its anticipatory character brings to mind much older medieval *memento mori* images suggesting that humanity’s days are numbered and death is inescapable. Thirdly, it makes the readers think about the free will/human destiny dichotomy and the extent to which the fate of the human race is predetermined. Overall, the Doomsday Clock Narratives, as I define them, are indebted to psychoanalysis and environmentalist discourse. Notions of trauma, pre-TSS, the return of the repressed, and the uncanny explain how seemingly fantastic stories reflect subliminal fears and anxieties contemporary readers are prone to feel. In the last two decades, numerous attempts have been made to describe and define climate-related mental conditions, both by journalists and by scientists, and their research makes it easier to understand contemporary disaster fictions. Yet, simultaneously, since the 1960s, environmental scientists and climate specialists have been describing dangerous anthropogenic changes happening in the world in non-fiction books and articles. To appeal to non-specialist readers, they use emotionally charged fables, metaphors, and symbolic objects. The “silent spring” of dying nature, the geological metaphors of mineralised waste, and the symbolic timepieces that count down the remaining years of human supremacy on the planet are among the most famous. They have infiltrated the collective imagination, and, together with the literary tradition of nuclear holocaust fiction, they influence the eco-narratology of climate fiction.

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3 Disaster Fantasies

Nuclear Holocaust Fiction and Climate Fiction

Both nuclear holocaust fiction and climate fiction are subgenres of disaster fiction and reflect the anxieties and fears evoked by the rapid technological development of the twentieth century that has resulted in an environmental crisis and, perhaps, in a threat to biological life on earth. These labels are used to refer to fiction written in the last seventy years and were coined to emphasise the common features these texts have: they address our apprehensions regarding, respectively, the creation and use of atom bombs and nuclear energy plants, and anthropogenic climate change. The labels were given retrospectively, and the classification of texts into these categories is to a certain extent arbitrary; for example, Dan Bloom, who coined the term cli-fi, included books written long before climate change discussions began in the genre. In general, critics do not agree on how to divide disaster fiction, and blogs devoted to recent literature, encyclopaedias, and lexicons of science fiction all give several related entries whose scope overlaps: apocalyptic fiction, holocaust and postholocaust fiction, ecocide fiction, environmental science fiction, eco-dystopias, to name a few.

Yet, despite the difficulty in labelling literary disasters, nuclear holocaust fiction and cli-fi are useful terms for novels picturing specific kinds of disasters. The Domsday Clock Narratives I analyse in this book depict the pre-TSS of people awaiting an inevitable catastrophe caused by human abuse of technology. Following in the footsteps of David Punter and Rosemary Jackson, who in the late twentieth century discussed Gothic and fantasy from the perspective of psychoanalysis, I claim that fantastic catastrophic scenarios bring to the surface latent anxieties and allow readers to see their own suppressed apprehensions. This encounter with exaggerated and mapped fears creates the effect of the uncanny, and flash-forwards to future calamities disrupt linear narration. As the fear of nuclear war and eco-anxiety originate in familiarity with media coverage of such catastrophes, the dependence of pre-TSS on vicarious trauma should also be addressed.

Disaster Story Tradition

It was around the turn of the twentieth century that European intellectuals started to view their own society, as well as various human civilisations in the past, in a pessimistic light: they realised that empires and cultures inevitably end and thought that, perhaps, their world would soon vanish. Nearly half a century after the publication of *On the Origin of Species*, Darwin's theory was still enormously influential, and evolutionary paradigms had shaped the way people perceived not only biological organisms but also social systems and whole cultures. Thus, human civilisations also came to be seen as subject to natural laws, such as survival of the fittest, or the struggle for existence. Moreover, cultures were perceived as having an inherent lifespan—just like living things. This biology-inspired belief led people to think that perhaps the fall of their own civilisation was also predetermined—when their final days came, nothing would be able to save them from extinction. History was considered to be as blind a force as biology, and whatever educated, civilised people did, they would not be able to overcome the inevitability of these historical processes. All the technological progress Europe and America had achieved, all the brilliant inventions, all the breath-taking discoveries, none of it could save us from the fate of the great empires of the past. Indeed, the opposite was true; material welfare and technological marvels were part of the great historical process and would bring about our end.

At the beginning of the new century, German philosopher of history Oswald Spengler published the classic *The Decline of the West*, where he describes civilisations, the West included, as living organisms which are ageing. Spengler claims that, in contrast to our intuitions, European and American culture is already very old and feeble and that, in fact, some primitive but virile and strong barbarians are sure to conquer us. The decline of the West in his opinion “is heralded already and sensible in and around us today” (74). Cultures, just like people, go through various ages-cum-phases—childhood, manhood, and old age—and ours ... is old. In the wake of World War I, Spengler's theses sounded all too probable; *The Decline of the West* was published just a few years before Freud's “Civilization and Its Discontents” (1929), an essay defining in philosophical terms the reasons for the mid-century traumas to come. Spengler, just like Freud, worries about the direction our apparently highly developed science was leading us in. He maintains that the flourishing of particle physics and the numerous discoveries concerning energy and matter that had resulted from it could not defend its proponents against less sophisticated enemies. According to Spengler, despite all the new applications made possible by scientific discoveries, by 1900 Western science was already past its spiritual

acme. Its decline was inevitable, and although people might be able to manufacture new sorts of deadly weapons, the glorious days of science as a noble means of discovering the universe were over, and the scientists of the period knew this in their hearts. His disbelief in the saving power of science is shared by Freud, for whom by the late 1920s it was already obvious enough that “power over nature is not the only condition of human happiness” (777). In “Civilization and Its Discontents” he notes that most modern inventions answer needs created by previous inventions and that the very idea of humankind slowly reaching higher levels of development and progressing towards some kind of utopia is just a dream: “Men are not gentle, friendly creatures wishing for love, who simply defend themselves if they are attacked, but a powerful measure of desire for aggression has to be reckoned as part of their instinctual endowment” (787).

It was in the late nineteenth and early twentieth centuries that British disaster fiction, reflecting similar sentiments, flourished. One of its artistic predecessors was the speculative scenarios of future—often very bloody—wars written during the late Victorian period. Examples of such texts are Louis Tracy’s *The Final War* (1893), which introduced the motif of “a war to end all wars” to speculative literature, and *Blake of the Rattlesnake* (1895) by Fred T. Jane, where new technologies applied on the future battlefields are described. Yet, the most disastrous vision can be found in George Griffith’s *The Angel of Revolution: A Tale of Coming Terror* (1893), where a malicious Franco-Slavic alliance is defeated by an Anglo-Saxon federation and that introducing new technology threatens social structures. In another story by George Griffith, *The Crack of Doom*, technological progress brings about catastrophic consequences—the new, lethal power of radioactivity.

Yet, according to critics, the true beginning of British disaster fiction is marked by the publishing of Richard Jefferies’ *After London* (1884). In this novel, which reflects the first anti-urban, anti-civilisation, and anti-imperial sentiments of the late Victorian times, Jefferies depicts the ruin of the greatest city on earth. At that time, writing from inside the British empire, popular authors such as Arthur Conan Doyle and H. G. Wells imagined bloody wars in the immediate future caused by bloody invasions of alien races or primitive peoples and the drastic measures that would have to be taken to fight them off—often involving the use of technologically enhanced weapons. In Well’s *The War of the Worlds*, humankind is doomed but for a bacteriological miracle, while in Conan Doyle’s *The Poison Belt* (1913), earth, travelling along its cosmic course, enters a belt of poison “ether” and mankind is annihilated. The latter story’s protagonist, Professor Challenger, who worships Darwin and never doubts the power of evolution, proves capable of remaining calm in the face of total annihilation. In true Spenglerian spirit, he knows that the end of one species is the

beginning of another; just as we have evolved, so others are going to evolve after us. In his exaggerated Britishness, he is a paragon of late Victorian attitudes towards the inevitable end of the empire. Roger Luckhurst argues that the appeal of British disaster fiction, at least partly, is the result of the repetitiveness of the genre which gives its avid readers “[t]he ‘pleasures’ of recognition” and gives them a chance to identify “with the always already surviving narrator amidst genocidal carnage” (37).

Yet, not all early disaster fiction follows the same pattern; some, like *The World Set Free* (1914) by H. G. Wells, are imbued with philosophical and social ideas. Wells predicts the invention of lethal atomic weapons in the twentieth century and divagates into how it will change human civilisation. The novel is divided into three parts: “A Trap to Catch the Sun,” “The Last War in the World,” and “The World Set Free.” At the beginning, Wells recounts the history of the human race: the slow, steady progress of “the tool-using, fire-making animal,” which evolves first biologically and then socially. Towards the end of the last Ice Age, humans develop technology and in the following millennia improve their inventions, until in the seventeenth and eighteenth centuries technological progress accelerates, and in the twentieth century people finally discover how to harness the internal energy contained in the atoms of the fictitious element carolinium. The development of nuclear physics results in humans obtaining an inexhaustible source of cheap energy which seemingly will enable people to create a social utopia. Yet, it turns out that humankind is not ready to live in peace and harmony: nations and social classes quarrel, war breaks out, and carolinium-powered atom bombs are dropped on all the major cities on earth. Each of these bombs results in a radioactive explosion whose half-life is long and which is never entirely exhausted, and the devastating war kills billions of people and wipes out most of humankind’s achievements. A handful of survivors rekindles civilisation in the hope that, this time, they will manage to control their instincts—according to Wells, it is our evolutionary heritage that makes every human society wage wars with its neighbours. The more advanced human technology gets, the more harm people inflict, and eventually they must change or cause a global disaster:

Sooner or later this choice would have confronted mankind. The sudden development of atomic science did but precipitate and render rapid and dramatic a clash between the new and the customary that had been gathering since ever the first flint was chipped or the first fire built together. From the day when man contrived himself a tool and suffered another male to draw near him, he ceased to be altogether a thing of instinct and untroubled convictions. From that day forth a widening breach can be traced between his egotistical passions and the social need. Slowly he adapted himself to the life of the homestead, and his

passionate impulses widened out to the demands of the clan and the tribe. But widen though his impulses might, the latent hunter and wanderer in his imagination outstripped their development.

(Wells)

Thus, the beginnings of disaster fiction can be found as far back as the nineteenth century. The genre was then developed after the Great War and only defined in the 1930s. Then, Alun Llewellyn published *The Strange Invaders* (1934), which is the first full and complete picture of anthropogenic disaster—the new ice age—and the subsequent postapocalyptic reality. The narrative of *The Strange Invaders* recounts the efforts of the last human community on earth to survive the invasion of an army of gigantic, cold-blooded lizards. The action takes place in the Gobi desert, in a half-destroyed isolated village governed by a group of priests who pray to the new trinity who are Karl Marx, Vladimir Lenin, and Joseph Stalin. In this depiction of a postapocalyptic future, we can already see motifs which later became characteristic of nuclear holocaust fiction and cli-fi: a change in the global climate, devolution, the regress of human civilisation, ruins peopled by some quasi-medieval cultists, and a main storyline centred around survival.

At the end of the decade, R. C. Sherriff published *The Hopkins Manuscript* (1939), a novel which, according to Brian Aldiss, is the first instance of the subgenre of disaster fiction he calls “cosy catastrophe,” a very British kind of disaster fiction which, rather than focusing on the fear of a looming catastrophe, appeals to latent nostalgia for a less overpopulated, more liveable world. Sherriff’s irony and sense of humour is, in Aldiss’ opinion, a parody of Victorian attitudes and tell-tale English mannerisms, just like in the case of Professor Challenger in the above-mentioned *The Poison Belt* by Conan Doyle. Sherriff’s novel is about a planetary catastrophe: the moon crashes down, destroying a part of Europe and is finally submerged in the Atlantic. The remaining part of the continent, peopled by British survivors, is raided by Asiatic races on jihad. In *Billion Year Spree*, a book-long essay on speculative fiction, Aldiss writes about numerous cosy catastrophes, all of which are stories devoted to humanity’s efforts to perpetuate life on an earth afflicted by catastrophes. In John Boland’s *White August* the disaster is snow; in J. G. Ballard’s *The Wind from Nowhere*, it is gales; in Dighton Morel’s *Moonlight Red*, it is insanity; in John Blackburn’s *The Scent of New-Mown Hay*, we see epidemics; in Charles Eric Maine’s *The Tides Went Out*, earth is hit by drying oceans; and in J. T. McIntosh’s *The Fittest*, our bane is fierce predators.

Yet, the best-known exponent of the British disaster story tradition (and the author of the best-known cosy catastrophes) is John Wyndham, whose books became enormously popular during the Cold War. The model for a

cosy catastrophe was set by Wyndham in *The Day of the Triffids* (1951), a novel where human civilisation as we know it ends overnight (nearly all people go blind) and a group of characters who miraculously retained their eyesight struggle to start it anew. Their task is all the more difficult because of attacks by triffids—carnivorous, mobile plants. Wyndham remains a very English and a very middle-class author; his plots are fantastic, but his characters are plausible, patriotic English people from the 1950s—intelligent, well-read, tradition-loving inhabitants of London and small villages such as the eponymous Midwich in *The Midwich Cuckoos*. Wyndham is a true disciple of H. G. Wells; in *The Midwich Cuckoos* he employs two Wellsian themes: there is an invasion from another planet, which in this case is difficult to discern; and all the women in a small town are simultaneously impregnated by “cuckoo” aliens and give birth to telepathic invaders. Moreover, all this happens against the backdrop of the Cold War; mutual suspicion between the Eastern and Western empires (a similar impregnation takes place in a Russian town, but the children are annihilated there), propaganda in the media, and anti-Russian attitudes among the working class add to the vividness of his fantasy. In another of Wyndham’s disasters, *The Kraken Wakes*, the invaders whose arrival destabilises earth’s climate come from outer space, most probably Neptune. As they can survive only at very high pressures, they invade the depths of our oceans, but, as, according to Darwin, two intelligent races cannot occupy the same niche—in this case the same globe—they attempt to exterminate our species by melting the ice caps and drowning habitable areas. The dominant feeling is that of uneasiness; in all the three novels mentioned above, something unknown and dangerous is lurking just behind the idyllic English countryside of green meadows. Nevertheless, the characters are aware that their belief in their inherent superiority is somehow dated, and thus arise feelings of self-effacement and self-deprecation.

In this period of anxiety, disaster fiction flourished and the creative freedom it offers suited readers. In the introduction to his classic *The Literature of Terror*, David Punter argues that two things have always been true about popular culture: first, people are most eager to buy and read texts belonging to non-realistic genres, such as Gothic tales, ghost stories, serial killer thrillers, or novels about centuries-old conspiracies. Their plots might seem improbable, the ideas presented belie common sense and good taste, but their readers are nevertheless drawn to them. Secondly, it is precisely these fantastic literary genres telling improbable stories that in every epoch reflect the prevailing fears and anxieties of the period—non-realistic conventions allow for more freedom and enable authors to tackle difficult subjects. The example Punter gives is a Gothic classic, *Frankenstein* by Mary Shelley, which is both a non-realistic tale and a book reflecting the anxieties of Shelley’s contemporaries provoked by the—then widely

discussed—experiments of Franz Anton Mesmer. His ideas such as “animal magnetism” and attempts to cure people by applying magnets to their bodies made late eighteenth-century educated elites apprehensive: his crossing the line between what is human and what is inhuman, what is animate and what is inanimate, felt uncanny, and it was precisely in a Gothic tale—unrealistic, full of contradictions and transgressions—that these sentiments could be reflected. In his introduction to *A New Companion to the Gothic*, Punter develops this point by criticising the critical “fashion” of supposing that “because of its fantastic settings and melodramatic presentation [this literary genre] constituted in some sense an escape from social concerns” (4). In my opinion, the above remarks are also relevant when it comes to disaster fiction: non-realistic stories which have the power to appeal to a latent distress.

Nuclear Holocaust Fiction

It is far from unexpected that so many nuclear holocaust stories were written and filmed after the invention of atom bombs during World War II. The subsequent arms race resulted in a situation when, for the first time, the human race was technically able to destroy the planet entirely while political crises periodically rendered such a possibility probable. Knowing this made an enormous impact on the social and cultural life of the period: murky scenarios of nuclear catastrophe appear in popular fiction written in the 1950s and 1960s, while in realist texts, such as memoirs from the period, we often read about bomb drills at schools. Footage of Hiroshima and Nagasaki fatalities in the media, war films, and the *Atomic Information* bulletins handed out in cinemas (Boyer 352) made people aware that a nuclear holocaust might be waiting in the wings. In 1982 in “Psychological Fallout,” an article written for *Bulletin of the Atomic Scientists*, Michael Carey commented on interviews with members of the generation that grew up in the 1940s regarding the effect of nuclear weapons on their lives. The bomb was, for some of them, “a major force behind increased apathy, conformity, hedonism and lack of faith; the source of powerlessness, nervousness, sensationalism, alienation and dehumanization” (Carey 20). Born in 1944, Carey remembers unsettling air-raid drills at school, the terror of citywide blackouts, and numerous depictions of mushroom clouds in countless newsreels and newspapers which used to give him nightmares. Most vividly, he recalls his childish certainty that if the bombs were ever dropped he would die an excruciating death. Such memories where dreams, fantasies, and media coverage of real events—Hiroshima or Eniwetok Atoll—overlap result, in his opinion, in “a mass trauma induced by nuclear weapons” (20). Carey cites critics claiming that the bomb was responsible for the psychic numbing of a whole generation who, for many years, lived

under the constant expectation of a nuclear holocaust. Thus, the 1950s traumatised American children and teenagers born in the 1940s who were very different than those a little older or a little younger as the profound influence of Hiroshima, Cold War fears, and the arms race shaped their psyche. The post-war period was an “age of anxiety” with periods of acute fear and resigned numbness.

In *By the Bomb's Early Light*, a book devoted to the influence of nuclear weapons on twentieth-century American culture, Paul Boyer writes that after the very short period of patriotic triumphant joy—just after the Hiroshima and Nagasaki bombs were dropped and Japan surrendered—there came the anti-climax: fear and apprehension are felt in texts from that period. On the first day after Hiroshima, the American media discussed the super-bomb which was going to change the face of the earth and remodel human civilisation. Quite soon the apprehension gave way to hysteria: according to Boyer, people learned about the fall-out and the long-distance consequences of radiation sickness. John W. Campbell, Jr., who at that time published science fiction magazines, gave an interview to the *New Yorker* where he described a future World War III and prophesied the destruction of all American cities. In 1946, American popular press started to report on nuclear tests being conducted at that time at Bikini Atoll and their alarming results, the most horrific of which was the death of some unfortunate Japanese fishermen who were stranded in the Pacific Ocean eighty miles from the testing site. It is in such a cultural context that the first nuclear holocaust novels were published and movies devoted to the atomic threat—*Hiroshima mon Amour*, directed by Alain Resnais, and Stanley Kramer's *On the Beach*, to mention just a couple of the most famous—were made.

Brian Aldiss, in *Billion Year Spree* (1973), divides the history of science fiction into periods, and the main caesura between the genres' past and present is “the dropping of the atomic bomb [which] became the first move in the Cold War” (248). For him the bomb came as a shock for the science fiction community because similar inventions of lethal weapons had been described in science fiction for decades in books devoted to a future war, such as H. G. Wells' above-mentioned *The World Set Free*. Aldiss calls his chapter about the 1950s in science fiction *After the Impossible Happened* and underlines the fact that, having proved its predictive powers, the genre became widely used to voice warnings. From an upcoming, even more deadly war to dystopian societies oppressing individuals, science fiction novels described a variety of pessimistic scenarios the human race should avoid. Sam J. Lundwall in *Science Fiction: What It's About*, written in the same period, uses the term anti-Utopia to describe these catastrophic scenarios. In his opinion, fear of an approaching “end-of-the-world” (69) and a mistrust of human sanity resulted in the proliferation of disaster

fiction which presented iterative images of the extermination of mankind “in a thousand imaginative ways” and called into question the human ability to behave in a rational manner. Lundwall uses the term “the old Frankenstein trauma” to describe the resulting technophobia and the anxieties connected to scientific development. In his opinion, people in the West had grown to believe that “sooner or later man’s achievements will turn against their creator, be it the new society, man’s inborn instincts or the hydrogen bomb” (69).

Both Aldiss and Lundwall refer to disaster fiction without specifying the exact kind of world-ending disaster which is described, and yet they give the context of the nuclear threat as the main reason for the popularity of the theme. They also refer to these books using a number of terms—science fiction, dystopias, anti-Utopias, apocalyptic fiction, end-of-the-world stories—all of which are not defined, yet generally they are used as synonyms. Only some of the scenarios present a nuclear war, or the resulting regress of civilisation, and although they all reflect pre-TSS sentiments, they cannot all be labelled nuclear holocaust fiction. This literary phenomenon was only analysed in 2015 when Jerry Määttä undertook a systematic and quantitative study of post-World War II literary disasters. In “Keeping Count of the End of the World: A Statistical Analysis of the Historiography, Canonisation, and Historical Fluctuations of Anglophone Apocalyptic and Post-Apocalyptic Disaster Narratives,” he reports the results of his research conducted as part of a project titled ‘The End of the World: The Rhetoric and Ideology of Apocalypse in Literature and Film, ca. 1950–2010’, where statistics are used to determine how disasters were imagined in subsequent decades. Määttä uses the terms “apocalyptic” and “postapocalyptic fiction” to describe literary and filmic disasters written in a period stretching from the 1820s to ca. 2010, though the overwhelming majority of texts he takes into account were written after World War II. In order to build his database, Määttä refers to “the thirteen relatively brief surveys I could find, written by critics and scholars recognized within the field of Anglophone science fiction” (413) and identifies thirty-five literary texts and movies which describe imagined disasters and which are mentioned most often by the critics. In this way he creates “The Apocalyptic Canon” where he includes Jean-Baptiste Cousin de Grainville’s prose poem written in 1805 titled *Le Dernier Homme*, Mary Shelley’s 1826 novel *The Last Man*, three novels by H. G. Wells, novels by John Wyndham and Richard Matheson, three early disaster stories by J. G. Ballard, books by Aldous Huxley and Angela Carter, and five films, among them the famous *Mad Max* trilogy (1979–1985). Notably, “three of the top five titles are depictions of nuclear war published in the late 1950s, by Walter M. Miller, Jr., Mordecai Roshwald, and Nevil Shute” (415, my emphasis).

The part of the quote which I emphasised points to the cultural impact of the bomb and popularity of its artistic depictions. Additionally, over one-third of all texts in this database (ranging from the nineteenth century to the mid-1980s) were written in the 1950s, the most intense part of the Cold War, when nuclear anxiety was acute. What is more, the priority of the stories dealing with nuclear war is unquestionable, although diseases (and famines) often figure as secondary calamities following an atomic war. Commenting on the overwhelming impact of this nuclear holocaust fiction, Määttä refers to critics I. F. Clarke and M. Clarke, who connect the sudden outbreak of apocalyptic fiction to the cultural shock of Hiroshima which impacted the ensuing four decades of end-of-the-world narratives. Interestingly, in these fictions, the calamities result from human folly. Määttä's study concludes with an attempt to discern the periods when, in the anglophone world, apocalyptic and postapocalyptic narratives were most popular. He also connects high points for disaster narratives with the broader cultural climate of the period. Such novels were popular during the dismantling of the British empire and the post-war years in the United States. In the early 1950s, apocalyptic texts were increasingly popular again, "culminating during the so-called Second Cold War of the early 1980s, with a large number of memorable novels and films" (427). These disaster narratives reflect collective anxieties and challenge the human capacity to stay in control: neither societies nor individuals can be trusted. Such a conclusion makes his study relevant to the present discussion of pre-TTS and nuclear holocaust fiction.

A more detailed chronological account of nuclear holocaust fiction can be found in Paul Brians' "Nuclear War in Science Fiction, 1945–59," an article published in *Science Fiction Studies* in the mid-1980s, in the late Cold War context of renewed fears of global conflict. Brians notes how, in the post-Hiroshima period of the late 1940s, science fiction reflected beliefs in the civilisation-transforming powers of modern science "in the bright new Atomic Age" and then started to warn against "hazards of nuclear warfare" (253). Yet, as early as the autumn of 1945, George Orwell, who then coined the term "Cold War," was the first writer to ask his readers to contemplate the possibility of the near and total destruction of our planet and to confront the cultural, social, and political implications of this. In the essay "You and the Atom Bomb," he claims that, because we are all likely to be blown to pieces by an atomic bomb within the following five years, the bomb is everybody's problem and everybody should be discussing it. At a time when "some lonely lunatic in a laboratory might blow civilisation to smithereens, as easily as touching off a firework" (Orwell), no one can remain indifferent. At the same moment, just after Hiroshima, British atomic scientist M. L. E. Oliphant warned the public that "a properly modified atomic weapon could kill every living thing for a thousand miles

around,” while politician Bernard Baruch declared that we were facing the choice between “World Peace or World Destruction ... the quick and the dead” (Brians 254). Brians enumerates atomic war stories written in this period devoted to interplanetary warfare, bombs as planet-crackers, and more serious issues: the threat of life on earth going extinct, radiation sickness, and humanity’s propensity for self-destruction.

In the decade following the war, nuclear holocaust fiction first flourished and then, by 1954, became a tired cliché, a state of affairs which changed only in the mid-1950 when atomic war had become a real prospect again and many disaster fiction writers began to treat the theme with respect and apprehension. It was the global political situation that changed their attitude: in the spring of 1954, nuclear Bravo test fall-out from the Marshall Islands contaminated the “Lucky Dragon,” a Japanese fishing boat. All over the world people grew concerned over atomic testing, and 1955 “saw the publication of more nuclear war fiction than any year since 1946, most of it in novels” (Brians 255). In the following years, nuclear holocaust fiction matured artistically and intellectually, and pre-TSS in the period is reflected in the set of themes which were introduced to the genre. One of the most important of them is mutation resulting from nuclear fall-out, a motif resonating with what people feared in the 1950s. The American reading public was then terrified by news of Soviet attempts to construct thermonuclear missiles, which were then being tested in the atmosphere. This led to reports of radiation-polluted rain in Chicago and strontium-90-polluted milk in American grocery shops. Literary mutants are uncanny projections of this threat—simultaneously inside our bodies and outside of them; they epitomise what can become of us and our children and what can attack us. Benign yet persecuted mutants, like in Wyndham’s *The Chrysalids*; malign and murderous mutants, like the cannibals in Miller’s *A Canticle*; or devolved and slowly dying mutated offspring of nuclear blast survivors, like the “Out People” in Angela Carter’s *Heroes and Villains*, all introduce to the stories moral dilemmas and embody fears evoked by media reports on pollution. Similar ambiguity can be found in the presentation of science in post-Hiroshima fiction whose authors are afraid that anti-science sentiments will suppress scientific research, and their motifs of “an ignorant priesthood banning investigation and experimentation in the name of preventing the recurrence of nuclear war” (Brians 258) are mixed with the already-mentioned “old Frankenstein trauma” (Lundwall 69) of scientists literally responsible for the bomb. T. A. Shippey writes in his essay “The Cold War in Science Fiction, 1940–1960,” that as societies were slowly adjusting to the constant threat of nuclear extinction, science fiction became a forum for asking questions such as “Could anyone afford to let scientists remain at the top of the totem pole? Was there a way out of deterrents?” (93).

Moreover, in nuclear holocaust fiction written in this period, there appears the theme of ecocide, the universal death of all living things on earth. Early examples include Nevil Shute's *On the Beach* and Mordecai Roshwald's *Level 7*, and in the following decades, this motif was introduced to cli-fi and became the common denominator in all Domsday Clock Narratives. Yet, nuclear holocaust fiction does not necessarily depict the ultimate end of the world; some of the narratives are devoted to recreating civilisation. Brians claims that in the second, third, and fourth decades after Hiroshima, nuclear war and its consequences were the subjects of some very well-written novels—among them, Fritz Leiber's "The Night of the Long Knives," James Blish's "The Oath," Daniel F. Galouye's *Dark Universe*, Brian Aldiss's *Greybeard*, Philip K. Dick's *Dr Bloodmoney, or How We Got Along after the Bomb*, Johnny Byrne's "Yesterday's Gardens," James Tiptree, Jr's "The Man Who Walked Home," Syd Logsdon's *A Fond Farewell to Dying*, and Vonda McIntyre's *Dreamsnake*.

Brians' study reaches as far as the early 1980s and takes into account both British and American nuclear holocaust fiction. In 2013, Daniel Cordle published "Protect/Protest: British Nuclear Fiction of the 1980s," an article which is a continuation of Brians' study, albeit one limited to British literature. Cordle makes the case for the 1980s as a nuclear decade and discusses a distinctive nuclear culture which emerged in Britain in the context of the late Cold War. His research is an important backdrop to my Chapter 5, which is devoted to the Domsday Clock Narratives written at that time. He notes that in the early 1980s in Britain, a renewed interest in the state of British civil defence resulted from the threat of Russia's SS 20 missiles, which exposed Britain's weakness to attack. The distribution of the *Protect and Survive* civil defence pamphlet and BBC programmes informing the population how to prepare their houses for nuclear war "by making small-scale improvements to the home: constructing simple 'inner refuges', stockpiling food and water etc." (656) resulted in a fear of imminent attack and the need to feel protected, and also—quite the opposite—in protests against the campaign and calls for nuclear disarmament. The sheer absurdity of the measures proposed in the campaign was overwhelming, and the apprehension caused by the return of Cold War rhetoric was felt in Britain then. Cordle writes about "discourses of protection and protest that can be used to make sense of some of the dynamics at play in British nuclear culture and literature at this time" (656). It was in this period, in 1982, that J. G. Ballard commented on the American military presence in the UK, and his words seem to confirm the point Cordle is making. In an "Interview by A. Juno and Vale," he talks about a big controversy regarding cruise missiles sited in the UK. The idea was to mount the cruise warheads on trucks and—in the event of a crisis in relations with Russia—use them. Having the missiles on the backs of the trucks would

allow them to be driven quickly to secret dispersal points in the event of a nuclear confrontation so that they were not targeted by Russian attack systems. Later in the interview, Ballard shares his anxiety about how vulnerable Britain was: he would kindly welcome American troopers in his own backyard if only they could prevent the Russians from launching their missiles. Ballard's apprehension resulted from his PTSD (he was a teenage prisoner of war in a Japanese camp during World War II), but it also points to his pre-TSS, his belief that we are living in-between catastrophes.

Similar sentiments can be found, according to Cordle, in many books published at that time. From YA novels, such as Maggie Gee's *The Burning Book*, Robert Swindells' *Brother in the Land*, and Louise Lawrence's *Children of Dust*, to famous nuclear-holocaust-in-Britain films like *Threads* and *When the Wind Blows*, to texts by Ian McEwan and Martin Amis. Cordle describes the acute anxiety of the period. People suffered from pre-TSS, resulting from their disbelief in the measures offered "that protection of the family was possible was not necessarily comforting when a little household DIY was all that was being offered as the palliative to thermo-nuclear attack" (661). The "nuclear family" pun is used in this article to point to the fact that "the reading of home and family as intimately bound up in Cold War culture" was common then (662). The family as a safe site of traditional values, protecting its members and in need of protection from actual missile attacks and ideological threats alike, was part of the propaganda of both Thatcher and Reagan, who in the 1980s both "(mis)remembered" the 1950s nostalgically, calling this decade a period of stability and prosperity when family values were respected.

Daniel Cordle is also the author of "In Dreams, in Imagination: Suspense, Anxiety and the Cold War in Tim O'Brian's *The Nuclear Age*." Although devoted to an analysis of only one novel, this article reads O'Brian's book in the well-researched context of mid-1980s nuclear culture. Just as "Protect/Protest: British Nuclear Fiction of the 1980s" is devoted to the British literary scene, "In Dreams, in Imagination" describes America and pays special attention to pre-TSS in *The Nuclear Age*'s protagonist and, by extension, his whole generation. The key term he uses is "nuclear anxiety" (103) caused by the fact that, for most of the decades-long period of the Cold War, nuclear fears were driven beneath the surface. The nagging awareness that a nuclear holocaust might actually happen, any day, rendered life absurd, making Americans "numb": working, socialising, planning their family future, and at the same time subliminally awaiting the blast. "To have become 'adjusted', as Kennedy put it, seems to mean, in general, to have suppressed anxieties about nuclear war. This does not, of course, mean that people were unaware of nuclear weapons" (103).

One of the most important analyses of the impact nuclear weapons had on the psychological condition, and well-being, of mid- and late

twentieth-century Americans is *Indefensible Weapons: The Political and Psychological Case against Nuclearism* by Robert Jay Lifton and Richard Falk. This volume of essays argues for the unconditional abolishment of nuclear weapons: the psychologist Lifton lays out the psychological damage “nuclearism” inflicts on people’s minds, while Falk describes the political and historical aspects of current manifestations of “nuclearism” (the deployment of missiles in Europe, a long-term policy of staying alert, attempts to create a still more lethal neutron bomb). They define “nuclearism” as “the psychological, political, and military dependence on nuclear weapons, the embrace of weapons as a solution to a wide variety of human dilemmas” (ix) and claim that it is addiction-forming and extremely harmful. Lifton summarises his earlier work on Hiroshima survivors and examines popular fallacies concerning the impact of the bomb, proving not only that nuclear wars cannot be controlled or limited but also that it is impossible to get prepared for such a war, and there will never be any recovery for its survivors. He also claims that such bombs are harmful even if they are never used: children who have been subjected to “duck and cover” air-raid drills develop (often indistinct and repressed) feeling that something terrible is going to happen at any moment, and he describes the emotions people feel in such prolonged periods of half-conscious waiting for disaster.

Be it a nuclear war or catastrophic climate change, people who are suffering pre-TSS develop similar symptoms. Living life “on the cusp” (the feeling that we are “just before” some calamity), which Lifton describes in his study, is reflected in nuclear holocaust fiction. Interestingly, his interviewees first deny that nuclear fear has been an important aspect in their lives. Alternating periods of terrifying political crises, when people were actually waiting for bombs to drop on their heads, as well as long spells of numbness when the fear was latent, took their toll on the psyche. The children of the Cold War had within their heads a constantly present, though frequently suppressed, anxiety. These subliminal apprehensions lessened only in the late 1980s when the communist bloc disintegrated and the iron curtain was dismantled. Yet, it was precisely at the same time that global warming was recognised as another challenge facing humanity. Although not universally acknowledged, climate change has been debated ever since, and the threat of ecocide still looms large over the human race.

Climate Fiction

In “Protect/Protest: British Nuclear Fiction of the 1980s,” Daniel Cordle makes an interesting point—he suggests that in the decade which saw the end of the Cold War and perestroika, the wider public recognised the dangers of a “nuclear winter,” that is, catastrophic global climate change. As early as

the 1950s, people who protested against nuclear weapons testing suggested that test explosions might alter earth's climate, but it was only in the 1980s that nuclear and environmental activists started to act hand in hand. After the accidents at the Three Mile Island and Chernobyl power stations, the term "nuclear winter" entered the popular imagination. People realised that in the wake of a nuclear war, temperatures would catastrophically drop across the planet because sunlight would be blocked by ash in the atmosphere. The theme of "nuclear winter," and a subsequent ecocide, appears in "Fermi and Frost," Frederik Pohl's short story, discussed in my Introduction, as well as in a number of stories written in the following decades: from Maggie Gee's *The Ice Age* (1998) to Cormac McCarthy's *The Road* (2006).

Over the last forty years, issues connected to the climate have been hotly debated, and although the immediate danger of nuclear war has seemingly receded into history, eco-anxiety has replaced nuclear anxiety as it is likely to remain a fact of life in the near future. Jonathan Elmore, in *Fiction and the Sixth Mass Extinction*, notes that life in the midst of anthropogenic climate change and a decline in biodiversity is a highly stressful experience for a number of reasons. On the most basic physical level, living "through such profound disruptions of the atmospheric conditions we literally breathe, the aquifer we literally drink, and the food chain we so perilously sit atop" (1), is hazardous. Moreover, as "it's our fault" (1), the human race is also facing numerous ethical, spiritual, conceptual, and philosophical dilemmas: "we both internalize an increasingly fetishistic guilt over it and increasingly blame others for it" (1). Life in the Anthropocene is nerve-wracking and frustrating, and one way of dealing with the complex emotions we feel is, according to Elmore, to tell stories in either "a kind of collective working through what all of these changes can, could and should mean" (3) or to undertake deliberate work in order to raise environmental awareness. Following the example of Dan Bloom, who in 2006 coined the term, Elmore too calls these stories "cli-fi." Bloom's webpage, "The Cli-Fi Report," defined the subgenre by providing catalogues and lists of cli-fi publications: novels and scholarly articles alike. As Rebecca Evans claims in "Fantastic Futures? Cli-Fi, Climate Justice, and Queer Futurity," cli-fi is "a genre that seems capable of anticipating and articulating future prospects of a warming world" (95). And though the very term is imprecise, it has recently begun to garner a great deal of critical and popular attention and has "emerged as a touchstone in climate change discourse" (95).

The emergence of cli-fi at the beginning of this millennium was a social phenomenon, with this genre of fiction and film reflecting "but also to a degree informing views and shaping conversations on climate change" (Goodbody and Johns-Putra 1). At a time when eco-anxiety was being felt by the wider public and global warming had become a subject for blogs and discussions on internet forums, books about climate change became

a focus of academic attention. Yet, it is arguable whether we can call cli-fi a literary genre with its own narrative conventions and formulas (cli-fi texts generally seem to borrow narrative strategies of older genres, especially science fiction). Cli-fi can only be defined by the theme of anthropogenic climate change, which is central for its plots and its involvement with various political, social, psychological, and ethical issues connected to climate change. Once the term cli-fi was created, many works of fiction written long before 2006 started to be considered part of the genre—as Jim Clarke puts it, “[b]efore there was climate change, there was nonetheless climate fiction” (7). Jonathan Elmore includes in this category the aforementioned nineteenth-century disaster novel of 1885, *After London* by Richard Jefferies, and also *The Crack of Doom* (1895) by Robert Cromie, *The Purple Cloud* (1901) by M. P. Shiel, and *The Second Deluge* (1912) by Garrett P. Serviss. These texts, written in the late Victorian and Edwardian periods, reflect anxieties prevalent in the last years of the British empire when the feeling of an approaching end to the safe pre-war world was pervasive. The climate catastrophes described point to the vulnerability of human civilisation, which only seemingly shields us from our hostile environment, and yet, in retrospect, these novels are the first speculations on how a change in climate may result in social unrest, migrations, and the regression of civilisation. Christina Lord, in her essay titled “The Tragic Comedy of Humanity: Life after Species Extinction in Éric Chevillard’s *Sans l’orang-outan*,” discusses this “sub-genre of SF and its variations of end-of-world and last-man scenarios” (135) where the disaster happens not because of instantaneous divine intervention but for ecological and demographic reasons. She finds cli-fi-like motifs in J. H. Rosny’s *La Mort de la Terre* (1910), which describes dramatic changes in earth’s climate which result from humanity’s impact on nature, and Camille Flammarion’s *La Fin do Monde*, where toxic gases destroy the atmosphere causing a climate catastrophe.

Similarly, we may call some texts “proto-cli-fi” if they were written during World War II and describe fictional climate changes in such a way as to make the reader realise that human greed and myopia may result in the destruction of our planet and also cultural regression. In 1944, H. F. Heard wrote “The Great Fog,” a story which James Gunn, in *The Road to Science Fiction: The British Way*, calls “a throwback to the tradition of the ‘cosy’ English catastrophe with its emphasis on human character” (199), but which can be read as a premonition of anthropogenic climate disaster. In the story, careless human experiments put an end to the world as we know it when, in secret military labs, army botanists produce an edible mould capable of engendering a climate of its own by increasing humidity. Their aim is to obtain an unlimited source of food to feed the army as the mould creates nutritious fats. Furthermore, it grows anywhere and, in order to survive in dry conditions,

increases humidity around the trees it infects. One of the characters, a meteorologist, explains that crafting the mould might prove to be the most remarkable event of World War II. Moulds produce spores and breed incessantly; therefore, with its ability to alter habitats so that they suit it, the newly crafted mould is doomed to conquer and irreversibly change the planet, like a genie let out of its bottle by the army bioengineers. And this is precisely what happens—the unstoppable spreading of the mould changes the climate forever; the earth is covered with a dense fog that makes it not only impossible to see into the distance but also to travel, make fire, weld metals, or store food, though at the same time no one is hungry, needs clothes or shelter; people live in warm moisture surrounded by unending fields of edible mould. The human race does survive, but it devolves and is reduced to living without the advantages of technology, which prevents it from inflicting more harm, which would seem to be a blessing as the species is not fit to be roaming free.

Thus, the catastrophe can only be explained by divine intervention and the workings of some superhuman power, one which controls the universe and decides that people should be punished with a Second Deluge, but not wiped off the face of the earth. Humankind has to be taught a severe moral lesson in order to mend its ways, and one day, perhaps, the fog will clear up and the survivors will get another chance to rule the planet. This story, written during the war by a British writer for the American market, reflects the pessimistic attitudes and apprehension of Europeans at that time, and yet, in hindsight, it can be labelled cli-fi. Heard does describe anthropogenic climate change which leads to devolution and regression; he also depicts scientists unable to reverse the deadly processes they themselves initiated, and politicians who choose not to notice the problem until it is much too late. Living in the Anthropocene, and knowing it, gives us a special kind of sensitivity which, on the one hand, results in creating cli-fi scenarios which reflect our anxiety and, on the other hand, changes the way we read earlier works of speculative and science fiction.

According to Goodbody and Johns-Putra, in the late twentieth and early twenty-first centuries, periods of public concern about humanity's impact on the climate have alternated with spells of numbness. Just like in the case of nuclear holocaust fiction, after shifts in public opinion, clusters of cli-fi books have been published. As various issues, such as the human impact on the climate resulting from overpopulation, pollution, and acid rain, were being discussed in the media and public concern began to grow, the first Earth Day was organised in the United States in 1970. The World Climate Conference in Geneva followed in 1979, bringing to public attention the cumulative work of a host of scientists regarding the climate: Charles Keeling, Roger Revelle, Wally Broecker, Reid Bryson, and Stephen Schneider. Next, cli-fi motifs appeared in a number of books written in the years 1980–2000: Ursula Le Guin's *Lathe of Heaven*, Arthur Herzog's *Heat*, George

Turner's *The Sea and Summer*, Maggie Gee's *The Ice People*, Norman Spinrad's *Greenhouse Summer*, and T. C. Boyle's *A Friend of the Earth*. Other writers who tackled the subject were sci-fi authors (Kim Stanley Robinson and Paolo Bacigalupi) and thriller writers (Rock Brynner, James Herbert, Michael Crichton, and Clive Cussler). Al Gore's success in raising the profile of climate activism in the 2000s resulted in novels by Margaret Atwood, Jeanette Winterson, and Liz Jensen. In 2007, the "Climategate" controversy (i.e. the Climatic Research Unit email controversy, initiated by the hacking of a server at the University of East Anglia) renewed interest in cli-fi which grew even further when, in 2009 at the UN's Copenhagen conference, politicians from all over the world failed to reach an agreement. Thus, after 2010, a surge of cli-fi novels became a fact of literary life and a subject studied in academia. Focusing on "the waning boundaries between the human and the nonhuman and the ways in which human practices are disrupting the natural world almost to the point of no return" (Savi) is an integral aspect of contemporary humanities and social studies. In *Extinction Studies: Stories of Time, Death and Generations*, Deborah Bird Rose, Thom van Dooren, and Matthew Chrulew collect texts by thinkers from diverse fields—philosophy, literature, history, and a range of other perspectives—to chart biocultural and ethical responses to the Anthropocene. In their opinion, "stories" are vehicles able to transmit the complex emotions of people who "find themselves overwhelmed with the depressing inevitability and crushing finality of extinction" (Bird Rose, van Dooren, and Chrulew 2). Similarly, Melina Pereira Savi claims that

literature, like the humanities, is outpouring with works that warn, ponder on, and speculate what is happening and what might happen if we continue to overlook the practices that have led the world to enter (according to human parameters, of course) the Anthropocene Epoch.

Her essay "The Anthropocene (and) (in) the Humanities: Possibilities for Literary Studies" discusses fiction by, among others, Emily St John, Margaret Atwood, Jeanette Winterson, Robert Farlane, Ruth Ozeki, and Helen Macdonald as instances of literature reflecting the Anthropocene-related anxieties.

Michael Fuchs, in "Telling Stories about Dying (Out)," voices such pretraumatic apprehensions in his overwhelming question: "will we want to live on the Earth in 2050, a planet inhabited by ten billion people, a planet radically transformed by climate change, and a planet robbed of around 15 percent of the nonhuman species living today?" (23). Similar questions are asked by Donna Orange in *Climate Crisis, Psychoanalysis, and Radical Ethics*. Orange is not only a literary scholar but also a clinical psychologist, and her research implicitly recognises a pre-TSS condition

in the way people today imagine their future selves. It is climate change and the subsequent extinction of numerous animal species that haunts our imagined futures and speculative literature: science fiction and cli-fi allow for articulating these fears. Sherryl Vint, in *Animal Alterity: Science Fiction and the Question of the Animal*, praises these fantastic genres for their ability to give voice to our half-latent nightmares. Cli-fi today, just like nuclear holocaust fiction seventy and fifty years ago, speaks clearly and loudly about the approaching anthropogenic disaster. E. Ann Kaplan, in “Is Climate-Related Pre-Traumatic Stress Syndrome a Real Condition?” makes a similar point in her discussion of dystopian films. In her opinion, *The Road* (adapted in 2009 from Cormac McCarthy’s novel) and *The Book of Eli* (2010) embody future-oriented anxieties which plague pre-TSS sufferers. Such movies allow viewers to confront their apprehensions and prepare them for a disastrous future, so in this respect they are similar to terrifying documentaries showing our human folly in relentlessly exploiting the planet, and they are not so easily avoided by climate change deniers. Kaplan also notes that some movies go a step further, depicting pre-TSS sufferers themselves—for example, in Jeff Nichols’ *Take Shelter* (2011) and Paul Schrader’s *First Reformed* (2018)—and she proves that the pretraumatic stress felt by the protagonists is transmitted onto the moviegoers. Therefore, fear of the future and the increasing number of people suffering from pre-TSS today are reflected in writing and filming climate fiction, which results in a growing awareness that climate change and its impact on mental health alike are among the most dangerous hazards facing humanity today. Climate fiction may thus be considered proof that pre-TSS is a fact of contemporary life, and one should not be overly wary of “over-diagnosis and unnecessary over-medicalization” when they are using the term “pre-traumatic stress condition” (Kaplan).

Climate fiction and nuclear holocaust fiction—as I have decided to call these texts—are therefore channels to discovering what is latent and suppressed. Rosemary Jackson, whose work in literary criticism is very strongly influenced by psychoanalysis, might be a useful point of reference. In *Fantasy: The Literature of Subversion*, her study on how fantasy genres indirectly describe what a given epoch considers ugly, forbidden, or indecent, she draws a parallel between the fluidity of the definition of fantasy and its ability to unearth the hidden unpleasant aspects of reality. “There is no abstract entity called ‘fantasy’” (8), she claims and goes on to explain that there is only a group of somehow related works which share similar structural characteristics and “seem to be generated by similar unconscious desires” (8). Though Jackson wrote her book long before climate change became widely recognised, by replacing “fantasy” with cli-fi or nuclear holocaust fiction, we may repeat her claim that these literary

fantasies, just like dreams, recycle suppressed elements. They have to do “with inverting elements of this world, re-combining its constitutive features in new relations to produce something strange ... from a psychoanalytical perspective ... these features [are] the narrative effects of basic psychic impulses” (8). Discussing disaster fiction in this way, we are reminded of the Freudian notion of sublimation. Giving cli-fi fantasies a futuristic or alternate reality setting lowers the pressure on the writers, who can both express pre-TSS, and neither sound alarmist nor commit themselves to some political agendas. Reading “The Uncanny,” Rosemary Jackson in *Fantasy: The Literature of Subversion* argues that the dread we feel faced with the uncanny is born in the deepest levels of human consciousness as formed in prehistoric days when humankind could not yet tell the real from the supernatural. An embodied contradiction activates residues of animist activity in our minds and then a bizarre feeling of anxiety arises, one which Jackson associates with the return of repressed unconscious material to our consciousness. David Punter describes the very same mechanism using the example of another fantastic genre, the Gothic. He claims that, thanks to sublimation in Gothic fiction, an “unwillingness or incapacity directly to confront experimental contradiction finds expression in an apparently different, but in fact related, system of meanings in which the pain of contradiction is cancelled by the pleasure of fantasy” (Punter 75). Freud’s theory of the return of the repressed also helps to explain how the Gothic and cli-fi “work” by recalling and recycling previously suppressed elements (for instance) learnt from prognoses, forecasts, reports, and documentaries. At the same time, non-mimetic (and engaged in current ecological issues) cli-fi texts retain hybrid Gothic ambiguity. Andrew Smith and William Hughes’ *EcoGothic*, a book meant to “explore the Gothic theories of ecocriticism” (1), develops this idea discussing manifestations of the uncanny connection between the Gothic and the earth’s ecological system.

In the second half of the twentieth century and in the twenty-first century, disaster fiction has been thriving in English-speaking countries, and two of its new subgenres have emerged: nuclear holocaust fiction and cli-fi. The Doomsday Clock Narratives written during the Cold War belong to the former subgenre, while texts created against the backdrop of climate change belong to the latter. Like other non-realistic genres, such as Gothic (some of whose characteristics they share), nuclear holocaust fiction and cli-fi are not easy to define, and the fluidity of their generic boundaries is connected to their ability to describe and fantasise about the hidden, unpleasant aspects of reality. Nuclear holocaust stories depict in pessimistic detail what life after bombs are dropped looks like, and cli-fi stories explicitly depict the grim truth about the approaching ecological disaster which climate change deniers paint as exaggerated and hysterical. The Doomsday Clock Narratives belonging to both these subgenres reflect

pre-TSS and thus apply narrative devices of trauma fiction: the uncanny “return of the repressed” effect is achieved by disrupting chronological story lines. The flash-forwards to future calamities serve this purpose. These flash-forwards reach out to a disastrous future as imagined by the focalisers. Moreover, the focalisers create these images on the basis of mediated trauma—violent images spread in the media—which they have seen on numerous screens. They try to suppress media-inflicted fears, but, subliminally, they remember televised atrocities: war newsreels and climate disaster footage.

Interestingly, vicarious trauma also lies at the core of the experience of reading the Doomsday Clock Narratives. These texts appeal to people familiar with similar images, who suffer the vicarious trauma themselves and who find in disaster fiction the epitome of their hidden apprehensions. On the one hand, actually seeing the suppressed horrors is a relief, but, on the other, the Doomsday Clock Narratives transmit anxieties and add to the spreading of pre-TSS. Consequently, nuclear holocaust fiction and cli-fi thrive in the most developed countries where anti-war sentiments and ecological awareness are shared by many people, and it is not accidental that the novels analysed in the next three chapters were written in Western Europe, Australia, North America, and Japan. During the Cold War, in these regions located on the western side of the Iron Curtain (ideologically if not geographically), uncensored media reported freely on the nuclear threat and spread traumatic images of war atrocities. More recently, it is in these same regions that environmental issues have been continuously reported on and discussed. The pre-TSS of the Doomsday Clock Narratives thus resonates with the vicarious trauma of their readers.

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4 “Maybe It’s a Period of Grace”

Mid-Twentieth-Century Nuclear Holocaust Fiction in the Hands of Nevil Shute and Walter M. Miller

Doomsday Clock Narratives, as I poetically call works of fiction set in doomed worlds that have already experienced some anthropogenic calamity and now are counting down the remaining moments before the ultimate disaster, depict the last days of human civilisation. Most often they are focused on the minds of characters who await their own destruction—as in the case of Nevil Shute’s *On the Beach*—but sometimes the storyline itself reflects the inevitability of the approaching disaster. The latter effect—achieved, for example, by Walter M. Miller in *A Canticle for Leibowitz*—is only possible in a full-fledged narrative with a complex, often episodic structure that introduces numerous characters and a vast perspective. In both cases the characters are deprived of the free will living in a world where the first catastrophe has already happened, and the second—final—one is inevitable. Their situation is all the more tragic as nothing can be done. The temporal mode is a countdown—the brief period of human civilisation is contrasted with deep time, and the perspective is shifted from individuals and their immediate surroundings to planetary issues. The residue of the catastrophe that has already happened and the certainty of the disaster to come create the effect of the uncanny as the material world is simultaneously seen as intact and ruined: we recognise what has been destroyed in the petrified waste and see what has not yet been destroyed from a future, postapocalyptic perspective. Moreover, these two novels, published respectively in 1957 and 1959, reflect the anxieties of the post-Hiroshima period of modern history when Western intellectuals pondered the political, moral, and social consequences of having invented weapons of mass destruction. As early as the 1950s, the psychological impact of the bomb had been noticed and was being studied. Thus, the books by Shute and Miller are placed not only in the context of nuclear holocaust fiction but also in the historical accounts of the “psychological fallout” of the bomb.

Nevil Shute's *On the Beach*

In Nevil Shute's famous novel, an unexpected nuclear war has destroyed the Northern Hemisphere, killing most of the biological life on the planet, while in the far Southern regions, civilisation is still apparently intact. The story is set in Southern Australia where the inhabitants cannot do anything but wait for the radioactive pollution, spreading slowly but incessantly, to reach and kill them. Counting down the remaining weeks of their lives, Australians (and those foreigners who happened to be visiting there when the bombs were dropped in the north) are torn between accepting death and indulging in some wishful thinking that perhaps disaster will not come or will not be terminal. *On the Beach* can be therefore read as a study of pre-TSS, depicting the whole gamut of reactions to the certainty of death. Some critics have even accused Shute's novel of not actually depicting the threat posed by the bomb; in their opinion, the book merely allegorically shows how human beings deal with the awareness of their mortality, and counting down the days before the radioactive cloud comes is not much different than counting down the years until one's own death—only shorter.

One of the characters, Moira, in *On the Beach* stubbornly refuses to accept the inevitability of disaster and clings to the wildest hearsay: they are safe, because no wind blows across the equator or because deadly particles are too heavy to ever reach Australia. Another character, a US navy officer, explains that the level of radiation in Australia is constantly increasing and is already many times what it was before the bombs. The ensuing dialogue reflects the attitudes pre-TSS sufferers exhibit: after denial comes acceptance, and then some people wish that everything was already over, while others try to see the coming disaster as part of some greater plan, even divine or cosmic design. The officer confirms that there is no wind blowing into the Southern Hemisphere right from the North, which is why they are still alive. The girl bitterly wishes they were all dead, as the last weeks for her are "like waiting to be hanged." The man, who is a staunch Christian, answers, "Maybe it is. Or maybe it's a period of grace" (40). The latter belief that the last days the characters are counting down are a kind of gift from Providence to humans and a blessed period for making amends and getting ready to die a good death makes *On the Beach* allude to eschatological literature and the Second Coming. Yet, first and foremost, this book written in 1957 (by a man who knew he was terminally ill) is an example of the surge in nuclear holocaust fiction written after the end of World War II. The strange mixture of guilt and fear connected to devising, using, and further developing the bomb prompted writers and filmmakers to be extremely prolific. In the forty years after Hiroshima, works of fiction were abundant, "a seemingly endless succession of books and films would

describe the End of the World as the last act in a chain of human follies” (Clarke and Clarke xviii).

Nuclear holocaust fiction might thus be considered a kind of collective working-through of Western culture, just like cli-fi is today. Significantly, recurrent memories of the moment when people, very often very young at the time, learnt about the Hiroshima bomb are a common motif in fiction and non-fiction. Such flashbacks make this event, which was after all a part of the public sphere reported on in the media, similar to traumatic memories from one’s own childhood. The protagonist in E. L. Doctorov’s novel *The Book of Daniel* remembers the warm afternoon when he was playing on the porch of his parents’ house and his mother came to tell him about the atom bombs dropped in Japan. “I listened for the sound of the bomb, but the sky was quiet” (99), recalls the main character, for whom the arms race and the ensuing anti-communist hysteria in the United States were formative events.

In the introduction to the non-fiction book *By the Bomb’s Early Light*, historian Paul Boyer shares with his readers personal recollections of this afternoon on 6 August 1945 when “I read the ominous-looking newspaper headline, mispronouncing the new word as ‘a-tome’ since I had never heard anyone say it before” (ix). Boyer claims not to have remembered this afternoon before starting to research the impact of the bomb on mid-twentieth-century America in his forties, when he involuntarily opened “a whole locked roomful of recollections” and saw for himself how “the interior realm of consciousness and memory” (ix) operates. These memories—of a literary character and of a real American boy—are similar: sunny afternoons, an alarming piece of news, stunned incomprehension. Understandable only in hindsight, these memories are probably shared by millions of boys and girls born in the late 1930s who learned about Hiroshima on that memorable August day, and who then had bomb drills at school and during whose adolescence the United States tested new kinds of nuclear bombs in the South Pacific, at Bikini Atoll. These kids grew up amidst the Cold War, which Doctorov’s protagonist defines as a state of “incipient bomb-falling hostility by which the United States proposed to apply such pressure upon Soviet Russia that its government would collapse ... a terrible miscalculation that could lead to disaster” (239).

Nuclear holocaust fiction is a way of dealing with similar tensions: just like other modes of non-realist fiction, it avoids confronting reality directly, but instead finds expression in “an apparently different, but in fact related system of meanings in which the pain of contradiction is cancelled by the pleasure of fantasy” (Punter 75). This quote, taken from *The Literature of Terror*, comes from the passage where David Punter advocates reading Gothic fiction while keeping the Freudian notion of sublimation in mind. In “Creative Writers and Daydreaming,” Freud claims that it is the unreality

of the fantasy worlds imagined by the author that renders realistic those things which, in themselves, “could give no enjoyment ... a source of pleasure for the hearers and spectators at the performance of a writer’s work” (44). This claim can well be referred to when discussing the great popularity of nuclear holocaust fiction Clarke and Clarke write about. Reading about the bomb in fantasies could ease the tension and even perhaps give some sort of cathartic pleasure without committing the reader to real-life political and social policy lines.

Moreover, fantastic fiction, especially that set during and after a nuclear holocaust, is, according to John Berger, an ideal vehicle to describe taboo subjects:

post-apocalyptic discourses try to say what *cannot* be said (in a strict epistemological sense) and what *must not* be said (what is interdicted by ethical, religious, or other social sanctions). Nuclear war, for instance, has been considered ‘unthinkable’ in both those senses.

(14)

On the Beach is a prime example of a Doomsday Clock Narrative written in the days when a nuclear disaster was at the same time both “unthinkable” and probable. Shute describes taboo subjects (insidious death by radiation, the average human’s impotence in the face of the coming World War III) without calling for political action. It is a novel about the inevitable catastrophe and a study of humans’ reactions to it. The vaguely religious undertones are the only source of the characters’ hope—if they choose to believe in “a period of grace.”

The novel is set mostly in Melbourne, the southernmost big city in the Western world, and its environs. There, in the last six months before the radioactive cloud kills the remaining people and civilisation ends, three main characters interact. They are all male. Shute, who was born in Victorian England and grew up in Edwardian times, retains the worldview of his youth—he makes women in his novel somehow always dependant on the men they are in a relationship with. Thus, Lieutenant Commander Peter Holmes of the Australian navy has a wife, Mary, and an infant daughter, Jennifer; and Dwight Towers, who is the captain of an American submarine stranded in Australia, is trying to keep memories of his dead wife alive: she and all their family were killed in the nuclear war, but he pretends to believe they are still alive. Towers is loyal to his wife and resists the advances of Moira Davidson, a heavy-drinking, single, young Australian and a friend of the third protagonist, John Osborne, who is a scientist-cum-engineer working for the Commonwealth Scientific and Industrial Organisation and who understands what is going on with the earth’s biosphere.

During the remaining weeks, Towers spends some time in Holmes’ suburban home near the beach, meets Moira and Osborne, visits Moira’s family farm, and is sent with his crew on a mission to investigate the Jorgensen theory, according to which snow and rain will cleanse the atmosphere before the pollution reaches Australia. Holmes is appointed as a liaison officer to his submarine, and Osborne also joins the crew as a civil scientist. They also have another mission to perform: to check the source of some mysterious radio signals picked up by the Australians and coming from the direction of Seattle. Yet, the trip proves disappointing: the Jorgensen effect is merely wishful thinking, and the radio signals result from a broken window teetering on the transmitting button of a radio set. The crew comes back to Australia to find everybody slowly deteriorating and the government distributing cyanide pills. They die not even knowing how the final war started and escalated. They only remember from the news that an Arab–Israeli conflict developed into a Soviet Union–NATO war and a war between Soviet Russia and China.

It is worth noting that *On the Beach* was written in 1957, in “the heyday of what has sometimes been called the cosy catastrophe, a specifically British type of disaster novel by writers such as John Wyndham, John Christopher, Susan Cooper, Keith Roberts, John Brunner, and Richard Cowper” (Määttä 424). Immensely popular between 1951 and 1977, cosy catastrophes (as already mentioned in Chapter 3) focused not on the disaster itself but on what follows: in a depopulated world, a group of middle-class survivors recreate human civilisation by trying to reinstall traditional values. Sometimes read as nostalgic fantasies written in the wake of “the dismantling of the British Empire and the loss of Britain’s status as a superpower” (Määttä 243), cosy catastrophes do not describe disasters in detail; what is important is the new beginning. Shute, a middle-class British engineer and an ex-soldier who moved to Australia when he retired, is also very vague about the nature of radiation sickness: the depopulated lands Holmes, Towers, and Osborne see through the periscope are just empty and intact; people probably went to their homes to die, and, when the deadly pollution reaches Australia, people are euthanised before they get really sick. The novel is an apology for middle-class values: loyalty, chastity, dignity, honesty, and doing one’s duty. Yet, in his novel there is no “after the disaster,” no hope for the future, and therefore the emphasis falls on how people react to the certainty of rapidly approaching death, which also makes it a study of pre-TSS. The popularity of the novel, and of its film adaptation, suggests that despite having no happy end, this story was considered enjoyable. In “The Imagination of Disaster,” an essay devoted to catastrophes in science fiction movies, Susan Sontag calls the turn of the 1960s an “age of extremity” and goes on to explain that people at that time lived under the continual threat of both “unremitting banality and

inconceivable terror.” In her opinion, the popular arts, especially movies, allow most people to cope with the trauma by feeding them fantasies. The popularity of nuclear holocaust fiction seems to confirm her intuition: in the 1950s and early 1960s, people were expecting disaster and (perhaps) subliminally thinking that they were not worthy of survival, which makes her think about Berliners in 1945, who allegedly believed they were not worthy of survival having lost the war.

Cozy catastrophes were written mostly by British authors who nostalgically described the bygone imperial values of 19-century Europe. American nuclear holocaust fiction probed deeper, anatomising the fear and guilt provoked by the bomb. Shute’s novel—written by a Briton, set in Australia, and depicting an American naval officer bound by a rather British code of values—is a powerful statement even despite the sanitisation of radiation sickness. Unlike most consolatory fantasies, it does not allow for any hope: the characters and all the human race will certainly soon perish. Actually, the approaching doom is a fact of life for the characters, a constant thought interwoven with everything they do. In the very first scenes of the novel, we see Holmes talk to a farmer who is in a hurry to do a small job for his wife because, while listening to the radio, he realises he has very little time. It is a matter-of-fact statement pointing to a factor which needs to be taken into consideration while planning: still half a year before the catastrophe, the Australian farmer tries to take the disaster in his stride with a very British dignity. Their short dialogue brings to mind late Victorian attitudes towards the inevitable end of the empire, reflected in disaster fiction from half a century earlier, as well as the dignified reaction to catastrophes displayed by John Wyndham’s characters. In the archetypal cosy catastrophe, *The Krakan Wakes*, the protagonists watch the ruins of a London submerged by alien tide-producing weapons, and the narrator asks his wife:

“Didn’t somebody or other once say: ‘This is the way the world ends, not with a bang but with a whimper?’”

Phyllis looked shocked. “*Somebody or other!*” she exclaimed. “That was Mr Eliot!”

(Wyndham 222)

The second of Shute’s protagonists, Towers, is introduced to the reader in a brief flashback which also emphasises the inevitability of the end: we see him remembering the weeks of war spent under the sea with no contact with the home port when he slowly realised the scale of the catastrophe. With no orders or directions, he was desperate to make contact with any radio station in the United States, failed, but was able to pick up the last hours of news broadcast from Mexico City, and the news was

dreadful. Other radio stations further and further south—Panama, Bogota, Valparaiso—knew nothing about what was going on in the north and went silent one by one. The remaining American submarines were running low on fuel and gravitated towards Brisbane and Melbourne, the southernmost centres of civilisation. Towers is blessed with “little imagination” (108), and as he did not actually see anything of the destruction of the nuclear war, he still cherishes the memories of his family. His way of coping with the trauma of their death and the pretrauma of his own demise is denial: he is constantly thinking about his wife and children, visualising them at home in circumstances just like those in which he left them.

Thus, Towers' sanity and reserve—he is the calmest and the most self-controlled of all the characters—results from a delusion reflected in the pun “half-life” (108), which is not only a reference to nuclear chemistry but also a psychological diagnosis. Towers experiences some sort of split: the rational “half” knows about the war and expects the deadly pollution; the emotional “half” is arrested in the reality from before the outbreak of war, misses his family, and expects to be reunited with them. It is the rational half that commands the ship and takes decisions, for example, at the moment when, during their mission along the American shore, one of the crew decides to abandon his post and stay in his home village waiting a day or so till the radiation kills him. The Yeomen reports on the radio that his parents are dead in bed and there are no dogs and no birds in the town. Talking with Osborne about the boy's decision to die quietly, fishing in his home village, Towers very easily can identify with the Yeoman and does not find it strange that he no longer sends messages. On the last day of his own life, he himself would rather fish than talk. It is only by refusing to get emotionally involved that he manages to live through the last days. When finally disaster comes and he is ordered to sink his submarine, full of classified technology, he does not hesitate although he knows that no one on the planet will survive to learn America's technological secrets. He finds his last suicidal mission reassuring, probably hoping to reunite his split self in death.

Some of the other characters also go through the stage of denial which allows them to live a comparatively happy “half-life” at the cost of not thinking about what they rationally know is about to come. Holmes's wife, Mary, refuses to come to terms with the thought that, in her husband's absence, she might have to euthanise their daughter, and thus she keeps pretending she does not understand what he means by suggesting she make things easy for the baby because there are moments when “you've just got to show some guts and face up to things” (157–159). Thanks to “not facing up to things,” Mary does not despair most of the time, though there are short spells of lucidity when she is forced to admit she is aware of the approaching disaster. Osborne, the third protagonist, is a scientist and

an engineer who works for the government researching nuclear pollution, and his way of dealing with the trauma is quite different. He finds solace in seeking knowledge and understanding the mechanism of the disaster. Having confirmed the totality of the catastrophe, unable and even reticent to deny grim reality, he takes up car racing and—with a group of other enthusiasts—participates in extremely dangerous competitions. In each race people are killed and injured, “like the Roman gladiators” (Shute 236). His friend, Moira, who makes this comparison, copes with the trauma by drinking heavily in the first few weeks after learning about the nuclear apocalypse, but later she changes her ways and, instead of mourning, decides to get on with her studies and live for a future which will never come.

Shute does not leave any hope for his characters and their world: though they cling to the tiniest hopes (that the atmosphere will be cleansed, that some people survived in Seattle), disaster is unavoidable and, with each passing day, more real. Thus, although his novel—just like cosy catastrophes—is an apology for middle-class values with no disturbing or naturalistic descriptions, its main theme is not the resilience of civilised people willing to recreate the world, but their dignity in death and ways of coping with pre-TSS. The earth beyond Australia is only glimpsed through the periscope or imagined. What the characters mourn is their future, all the lost possibilities. In *Requiem for a Species*, Clive Hamilton describes a similar psychological reaction to irreversible climate change:

for those who confront the facts and emotional meaning of climate change, the “death” that is mourned is the loss of the future. The first phase of grief is often marked by shock and disbelief, followed by a mixture of emotions: anger, anxiety, longing, depression and emptiness. To regulate the flood of unpleasant emotions, humans deploy a number of strategies ... numbness, pretence that the loss has not occurred, aggression directed at those seen as responsible for the loss, and self-blame.

(212)

It is the setting between two catastrophes that makes the characters of *On the Beach* behave like victims of pre-TSS. The first catastrophe, “the short bewildering war ... of which no history had been written or ever would be” (3), came as a shock to them, and before they have managed to come to terms with the loss of the pre-war world, they have to confront the prospect of their own demise. The fatality of this brief nuclear war is very difficult to accept as the characters do not know much about it: the war was not reported on in the media, and neither of the submariners, Holmes

and Towers, who spent it in submarines, nor the scientist Osborne in his Australian lab understand how it happened.

During the submarine mission to Seattle, Holmes, Osborne, and Towers share their opinions and guesses about the war, trying to reconstruct what actually happened and why. Their conclusions are bleak and grotesque: no one planned or wanted the war, most of it resulted from miscalculations and even mistakes. Probably, Soviet Russia, all of whose ports but one, Odessa, freeze up every winter, wanted control over Shanghai, while the Chinese wanted to populate the vast Siberian plains. Thus a confrontation between two Asiatic powers ensued: the Chinese had plans of their own—to weaken their neighbour and turn the Russians back into an agricultural people who would not have much industry left and would not need ports. Towers suspects that the Chinese planned to suffocate Russia’s industrial regions with a cobalt fall-out of heavy particles, hoping that the contamination would be easily contained. Yet winds spread the pollution in unexpected ways, and a local Euro-Asiatic conflict commenced a number of provocations and attacks. On an assumption that the Russians bombed Washington, the United States launched a retaliatory nuclear attack and bombed Leningrad, Odessa, Kharkov, Kuibyshev, and Molotov before realising that they were wrong. A full-fledged planetwide nuclear war destroyed the planet. “We bombed Russia by mistake?” asks Holmes in disbelief as the enormity of this horrible error leaves him incredulous. The three men realise that everybody on the planet is both a survivor and a victim of this absurd war; they live now in the in-between period: after the bombs exploded and before the extermination is over.

In the months and years after the atom bomb, emotional reactions to what happened had an enormous impact on American (and, to a lesser extent, English-speaking) culture, claims Paul Boyer in *By the Bomb’s Early Light*. He describes the “emotional roller-coaster” (49) the Manhattan Project’s scientists were riding after the Japanese surrender and the rapid end of the war: momentary elation, horror, a fervent hope that no more bombs would be made. In August 1946, journalist and short-story writer John Hersey published in the *New Yorker* “Hiroshima,” a long essay-like account of the bombing. Focalised from the multiple points of view of a number of inhabitants of Hiroshima (secretaries, seamstresses, missionaries, ministers, doctors), the report was very impactful: republished in book form, it instantly became a bestseller and helped English-speaking people imagine what the blast was like for the city’s inhabitants. Written in an exact, matter-of-fact style, “Hiroshima” inspired a confused mixture of emotions: sympathy and solidarity with people like us—the victims, as well as the shame of belonging to the attacking nation, and expectations that similar, much worse traumas lay ahead. Deemed by Thomas Disch as the single most influential document of the atomic age, “Hiroshima”

brought to public consciousness the dangers of radioactive fall-out. Hersey describes the long-term effects of radiation exposure and the varied psychological reactions of survivors: passivity, guilt, amazement, and suicidal feelings.

In Shute’s novel, a similar narrative technique is employed to survey ordinary people’s reactions to their coming death due to exposure and radiation sickness; they also share with Hersey’s real-life heroes an ignorance as to the rationale behind the war. M. Keith Booker calls “Hiroshima” “a graphic nonfiction account of the effects the American atomic bombing of the Japanese city of the title” and “the predecessor of all the postholocaust works of the long 1950s” (64). The latter remark is certainly applicable to *On the Beach*: the characters face the incredible and have to accept that there will be no happy ending. Shute emphasises the finality of the coming disaster by juxtaposing the multiple perspectives of modern Australians who are concerned with their families and work with deep time—an enormously long understanding of the millennia to come when earth will be empty and polluted. Osborne is aware that somebody in the government decided to record a history of this short fatal war and embed the files in glass bricks. The bricks contain embedded messages and are supposed to stay intact for aeons. Fused together, they form a pyramid—just like the one the characters in Arthur C. Clarke’s “The Star” find in a planetary system whose star went supernova—and, also like with Clarke, they tell the story of the extinct race—in this case humans. Shute’s characters are forced to imagine non-human readers of the messages in the distant future and, by doing this, accept the brevity of humans’ time on earth. No one will understand human writing or even recognise the simplified pictures of animals as by then there will be no cats left on earth. The attempts (and failures) to describe the unthinkable in human terms anticipates the ecocritical perspective: “‘nature’ cannot know extinction, since both ‘nature’ and ‘extinction’ are human constructs that cannot mean anything outside human discourse” (Elmore 14).

What Shute does communicate is anxiety, the most vividly described feeling felt by all the characters and one which resonates with the fear of a World War III as felt by the contemporaries of Hersey and Lifton and, in my opinion, the eco-anxiety of today. Towers’ crew suffers from various neuroses born of anxiety about their families and their homes, and the British and American officers who were stranded in Australia after their homelands were bombed suffer from unexpressed grief and cannot rid themselves of unbearable psychic pain. Many submariners lived with their families in Connecticut, near the main navy submarine base on the east coast and, after the war, were sent to their home harbour to check the radioactivity of the area, but they could do nothing to help the victims. With each passing day, the psychiatric condition of Towers’ crew also deteriorates, and there are cases of acute depression rendering the crew

unreliable. Moreover, counting down the remaining time, the characters grow aware of their own imminent death: in the north of Australia, radiation sickness is killing their relatives and friends and is spreading south. The people have been told about the abstractness of the catastrophe, but they have not really accepted it is turning into grim reality. Lethal particles are carried on the wind and slowly spread. *On the Beach* is structured according to the rhythm of the countdown—the Doomsday Clock metaphor is made literal as people in Melbourne calculate how much longer they will survive as the last big city on the earth. Hordes are already falling sick in Buenos Aires and Montevideo, and some as far south as Auckland. When the wave reaches Melbourne, Tasmania and the South Island of New Zealand can still survive for about a fortnight. The First Peoples in Tierra del Fuego will die as the last remnants of the human species.

Shute’s choice of radiation as the immediate cause of the approaching doom reflects the anxieties of the period; popular culture in the 1950s was full of dreadful images of menace resulting from the reckless use of atomic weapons: either the side-effects of World War II explosions, or the tests of enhanced nuclear weapons, just like the one at Bikini Atoll. Booker enumerates a number of such fantastic scenarios: in a movie titled *The Beast from 20,000 Fathoms*, H-bombs explode at the North Pole, bringing back to life a gigantic, germ-infested rhinoceros frozen in the Arctic. In *It Came from beneath the Sea*, nuclear tests make a gigantic killer octopus leave its lair in the Pacific and attack the west coast of the United States. In *Them!*, the Manhattan Project tests alter the conditions of insect life in the desert and, after some time, gigantic predatory colonies of man-eating ants evolve and set off to conquer American cities. One could go on enumerating similar stories: all of them echoing the horrid memories of the war and suppressed guilt. In the long run, the effects of using nuclear weapons are going to backfire on America or, like in Shute’s novel, the whole world. In “The Dissection of the Psychical Personality,” Freud claims that “impressions ... which have been sunk into the id by repression, are virtually immortal; after the passage of decades they behave as though they had just occurred,” and the indestructible lethal fall-out in all these fantasies embodies the return of what has been repressed.

It is also quite telling that radioactive fall-out in the popular imagination results in the degradation of life and devolution of species: it is primordial or ancient creatures which are awakened by the radiation. In this respect, by exploring the subject of devolution, science fiction in the 1950s harks back to Gothic novels by Robert Louis Stevenson, Oscar Wilde, Bram Stoker, and most of all H. G. Wells, the author of *The Time Machine*, *The War of the Worlds*, and *The Island of Dr. Moreau*. Mr Hyde might be within the self of civilised Dr Jekyll, a sophisticated late Victorian aesthete. Dorian Gray might indulge in beastly endeavours which only show on a hidden

picture. In the wild mountains far away from London, blood-drinking pre-human creatures might wait in hiding. The human race might devolve in the future: split into two species—one retarded, the other cannibalistic—or (d)evolve to become like Wells’ Martians, too physically weak to cope.

The late Victorian fear of the degeneration of the human race (and primarily of its most civilised and educated members) resonates in the non-fiction written just after Hiroshima, where an imagined fall-out contaminates America. In 1946, the Federation of American Scientists published a long pamphlet titled *One World or None* warning against a future atomic war. A nuclear chemist, Philip Morrison, contributed the chapter “If the Bomb Gets Out of Hand” to the volume, where he extrapolates from his observations made in Japan to predict what a Hiroshima-like bomb would do in New York. Paul Boyer emphasises the impact of this text on the popular imagination: Morrison’s graphic descriptions of radiation’s effects on blood, tissues, and bone marrow and his depictions of burning men and women and the charred bodies of children who were killed on their way home from school contributed to the anxiety that defined the nascent Cold War.

Similarly, in “Mist of Death over New York,” an article published in *Reader’s Digest* in 1947, the author explains in naturalistic detail what would happen if an atomic explosion in New York harbour sent a radioactive cloud over the city. The article describes the many dead, burned people drowning in the river and the few survivors who for years after suffer from radiation sickness. What is interesting in the context of Shute’s book is that, even 180 miles away from New York, the bombs kill thousands of victims. Therefore, people who heard the distant explosions were sentenced to die and yet had to wait for the fall-out to come. Another very influential early classic of nuclear weapons literature, one which made people aware of the dangers of radiation, was David Bradley’s *No Place to Hide*. Bradley was a young surgeon who worked as a “radiological monitor” during the American atomic bomb tests at Bikini Atoll in 1946. This autobiographical non-fiction account describes how Bradley and his colleagues find hotspots of radiation

in the water and algae, the coral heads and oil slicks, the reef fish and bottom sand; in the target ships’ paint and rust, planking and caulking, cables and water pipes, ladders and cockroaches; in the sailors’ souvenirs and the U.S. task force’s own water coolers and salt-water mains.

(Hammond)

Bradley’s book was a warning; the author wanted to alert Americans to the dangers of nuclear fall-out, and as the title suggests, the emphasis falls on the radiation’s penetrability and ubiquity. In *On the Beach*, Shute draws

on fears and anxieties of the period while making his characters wait for the radioactive cloud to come. What is going on in Melbourne, and inside stranded submarines, in his book is a more vivid version of the pre-TSS of the Cold War years. Towers copes with his unbearable stress by talking about what he is going to do after he returns home to his family, and he plans a fishing vacation. Yet simultaneously he agrees that other people may think him "nuts." Aware of his own denialism, he is both rational and irrational: the psychological toll of the bomb is menacing.

"If militant genocide does not turn the planet into an extermination camp ... fear and suspicion may turn it into a madhouse, in which the physicians in charge will be as psychotic as the patients" (1), Lewis Mumford wrote in 1948 in "Atom Bomb: 'Miracle' or 'Catastrophe?'" One of the first scholars to recognise the fact that the bomb does not need to explode in order to be harmful, Mumford claims that we should explore the inner space of the human mind to understand our civilisation. The pre-TSS of the 1940s and 1950s (although Mumford, of course, does not use the term) strikes him as one of the most powerful factors contributing to neuroses. Shute's book, despite its non-mimetic setting, can be read as a document of this epoch, an exploration of the same region of "the human mind." His characters suffer from an acute sense of frustration and feel lost in time: on the one hand, the world they knew outside Australia belongs to the past and has faded into memories; on the other hand, they have no future and can hardly imagine the depopulated, empty planet in a couple of years' time. Therefore, their present seems like a delusion, an unreal nightmare composed of flashbacks of a bygone world and flash-forwards to a catastrophic future.

Similarly, Towers and Osborne realise during the submarine mission to Seattle that they are the very last people to ever see Moresby, Cairns, or Darwin. Their conclusion is that very soon the earth will be devoid of any people, and the things they produced—cities, roads, sea craft—will remain intact for centuries, slowly turning into fossils or rust. Osborne is aware of this inevitable process and explains that the end of the human race is by no means the end of the inorganic world, which will get on without people even better. This grim vision is an echo of Ray Bradbury's famous disaster story, "There Will Come Soft Rains," in which people have destroyed themselves and contaminated biological life on the planet with deadly radiation. The last, lean dog, dying slowly of radiological sores, is the only creature to witness a fully automatic house whose mechanism is still working. A mechanical voice wakes the dead owners, breakfast is set, floors are cleaned. Only after a while can the reader guess what has really happened as the front wall of the house is black, save for five silhouettes: of a man mowing a lawn, of a woman picking flowers, and of two children with a ball in the air. These shadows on the walls remind the reader of the

human shadows etched in grey walls in Hiroshima: burned into concrete during the explosion. Bradbury’s world is a dead one where human-made technology outlives its makers; biological life is maimed and dying; and the only soft rains are garden sprinklers spreading water on radioactive rubble.

Towers confesses in the conversation with Osborne that, in his opinion, humans did not deserve the beautiful world they destroyed. He is the one who cherishes the illusion that he is going to be reunited with his family and go fishing in clean rivers. It is telling that *On the Beach* describes Australian wildlife, fields, and gardens from before the radiological contamination begins to show: beaches are beautiful, streams full of fish, fields fertile and roamed by hordes of very healthy rabbits, and suburban backyards bedecked with lush flowerbeds. After the war in the North, Australia is cut off from the rest of the world and its resources—petrol, fuels, ores—which forces people to travel on horseback and bicycles and return to traditional ways of doing things: tilling farmland and producing their own butter. Ironically, at first glance, the world looks much happier and healthier, like some sustainable utopia of eco-oriented nature lovers. In the midst of lush vegetation, the characters have flash-forwards to “all those fields and farms, with nobody, and nothing, left alive” (62). Osborne imagines people who perish quietly in their beds, just like animals who instinctively hide in holes to die, and the picture is uncanny: quiet and horrid at the same time and so is, apparently, orderly life in Melbourne. Gentlemen at the Club are reluctant to leave their stock of best port, so they intensify their drinking, while Holmes and his wife plant trees in their garden, all the while talking about the next spring. Vocational schools, meanwhile, are reopening, and in the last weeks of their lives, young people enrol hoping for a better life in the future, and surgeons operate on people to secure them a few more useful years. The contrast between joyful appearances and the creeping radiation sickness results in the uncanny feeling of finding oneself inside a horror movie: this is what happens when the submariners find a garden party in a hotspot in the north, but it is only when they near the party that they realise the guests are dead and the party has been over for a year.

Interestingly, *On the Beach* is not a manifesto, or a call for nuclear disarmament: what one should do is reconcile oneself with the ticking of the Doomsday Clock and die with dignity in the hope of salvation in the afterlife. In the film adaptation of the novel, Osborne (played by Fred Astaire), when asked who started World War III, answers “Albert Einstein,” blaming modern science for equipping humanity with the potentially lethal technology they are not mature enough to use. Yet, such anti-science statements are not to be found in the novel, and,

moreover, although the only solace the characters have is religion, Shute depicts people’s faith in an ambivalent fashion. Before washing down some poison tablets with brandy, Moira feels she should say something meaningful and “a little alcoholically [murmurs] the Lord’s Prayer” (312). Towers, who is a church-goer, tries to stay emotionally close to his deceased wife, Sharon, whose name is “like in the Bible” (Shute 204), and pretends he will meet her when he dies and tell her about his stay in Australia: “maybe she knows already” (277), he says. And yet, in a picture gallery, when he sees “the sorrowing Christ on the background of the destruction of a great city” (169), he admits to hating the painting: “For me it’s just phony. No pilot in his senses would be flying as low as that with thermonuclear bombs going off all around. He’d get burned up” (169). It is this non-realistic representation, and the cheap sentimentality of the religious painting, that enrages him. Although he does find some sort of similar solace in church-going and communing with Sharon, he “hates” seeing the irrational on canvas.

Overall, Shute’s characters suffer not from radiation sickness (they euthanise themselves before it begins) but from cognitive dissonance, as researchers of climate depression define it. Unable to grasp the meaning of the whole catastrophe, they repress any thoughts about it and try to maintain an illusion of normalcy for as long as possible. The notion of pre-TSS helps to describe this psychological situation, and, because the deadly cloud is steadily approaching, the action in the novel reflects the dynamics of the countdown. Therefore, *On the Beach* can be read as an early example of what I call the Doomsday Clock Narrative. Set between the catastrophes, the novel depicts the approaching disaster which is final and irrevocable; the characters’ demise is part of a much broader picture of a global catastrophe, and all that is going to remain on earth is mineral formations, fossils, and glass cubes preserving the terminal records of humanity.

Walter M. Miller’s *A Canticle for Leibowitz*

In a previously mentioned scene, the characters in Shute’s *On the Beach* discuss the government’s idea of preparing a “time capsule” and leaving it at the top of Mount Kosciuszko for future civilisations to find. They intend to draw and write short messages and then etch them in glass bricks, something which seems absurd as prospective readers will not be able to guess the meaning of words and depictions representing long-gone things. At this moment one character suggests etching “a picture of a fish ... F-I-S-H” (118). In Walter M. Miller’s *A Canticle for Leibowitz*, after the final catastrophe when “Lucifer is fallen” (atom bombs have been dropped, wiping out human

civilisation), we read the last paragraph of a novel which is devoted not to humankind but life more generally, and which also focuses on a fish.

A wind came across the ocean, sweeping with it a pall of fine white ash. The ash fell into the sea and into the breakers. The breakers washed dead shrimp ashore with the driftwood. Then they washed up the whiting. The shark swam out to his deepest waters and brooded in the old clean currents. He was very hungry that season.

(Miller 282)

These two passages, taken from two novels of the kind I call Doomsday Clock Narratives, share a number of characteristics. They are concerned with a post-human future and adopt the perspective of a non-human observer. The time capsule might be found by an alien race that visits the earth or, in millions of years’ time, by members of a sentient race who will evolve anew after the biosphere has been cleansed. Miller depicts nature which, after the demise of the human race, manages to survive and is slowly getting better: contaminated ash and dead animals are removed from the sea by powerful breakers, currents are clean and strong, underwater life is ready to re-emerge and conquer the planet. The shark and the “F-I-S-H” stand for that part of nature which is going to survive the disaster and recommence evolution: they are creatures of the primeval ocean, whence all life came, and, moreover, “the fish has been the iconic and nume- rological symbol of Christ since ancient times” (Scholes and Rabkin 225). Therefore, hints of a possible spiritual revival, albeit a post-human one, are there, and the end of the world is imbued with religious overtones.

Written in the late 1950s, both novels are concerned with the notion of apocalypse which, as James Berger claims in *After the End: Representations of Post-Apocalypse*, was in the wake of World War II a recurrent cultural motif, and its representations served various political and psychological purposes. Berger defines three meanings of the term apocalypse, all of which are important for Shute and Miller. Firstly, apocalypse denotes the actual imagined end of the world, as presented in Christian and Jewish religious texts, or as “imagined by medieval millenarian movements” (5). *On the Beach* and *A Canticle for Leibowitz* give their nuclear disasters certain religious overtones: the former, as already discussed, to a very limited degree, while the latter does so in a much more profound way. Secondly, apocalypses are for Berger traumatic events which resemble the visions of the end of the world found in religious discourse, and nuclear explosions in both novels bring up such associations. Finally, apocalypse is revelation, a transgressive event which allows us to see the real nature of the world, and it reveals something important about human civilisation, which both novels do. Moreover, according to Berger, literary representations of apocalypse

are very often written after traumatic historical events—“catastrophes so overwhelming that they seem to negate the possibility of expression at the same time ... they compel expression” (5). Both novels were written not long after the end of World War II, and both are set after a future nuclear war and, at the same time, before the final nuclear disaster that wipes the human race from the face of the planet.

Shute’s *On the Beach* is literally set just before contamination kills people and is focused on the minds of a small group of people who know it; Miller’s *A Canticle* depicts an inevitable catastrophe in a much broader timeframe, and the plot stretches over thousands of years. Yet, *A Canticle* is also focused on the minds of a few people (who live in the very same place in consecutive periods of history), and because its main literary technique is repetition with variation, it tells a similar story thrice, emphasising that everything that happens must happen. Set centuries after a nuclear war in an abbey of the Order of St Leibowitz, in what is today Utah, the novel consists of three novellas set in three consecutive eras: over half a millennium after the nuclear holocaust when civilisation is starting to rekindle; 600 years later in a period when people are rediscovering ancient wisdom, somewhat similar to our Renaissance; and after another 600 years when a technological civilisation quite like ours commences another planetwide nuclear war destroying the world anew. The Order of St Leibowitz was founded in the dark ages of “Simplification,” after the nuclear holocaust, and its main aim is to salvage books and hide them from the rage of a mob who blame the disaster on science. The Order’s patron, a twentieth-century engineer Isaac Leibowitz, allegedly survived the blast and lived in the period of “Simplification,” trying to save as much of the scientific heritage of the technological civilisation as he could, and ended up a martyr hanged on a piece of rope.

Centuries later, in “Fiat Homo,” the first of the three novellas, the post-Simplification zealously religious world is slowly waking up. In the remote abbey in the Utah desert, a group of monks copy old memorabilia (any scraps of paper salvaged from the flames). A young novice, Francis, who, just like his venerable namesake, is very simple-minded and talks to birds (who are, ironically, desert buzzards and not song birds), spends Lent keeping a lonely vigil among the ruins. One day, while building a shelter with pieces of stone and concrete to keep wolves at bay, he encounters an old wanderer, who is uncannily similar to Leibowitz from the legends, and who points to a piece of mortar Francis can use to strengthen his structure before disappearing. Francis lifts the piece and discovers a fall-out shelter, dating from the days of Leibowitz, full of memorabilia, including an electronic blueprint with the name of the Order’s patron on it and a skull with a gold-capped tooth believed to be that of the Blessed Emily Leibowitz. Though the abbot is reluctant to acknowledge the miracle, fearing that it

may impede Leibowitz's bid for sainthood, he lets Francis spend numerous years illuminating a copy of the blueprint, and finally, when New Rome decides to beatify the patron, Francis is sent there. En route he is robbed by highwaymen who take a golden copy of the blueprint and leave the precious original, not recognising the relic. Returning home, Francis decides to buy the copy back with money from the pope, but he is killed with an arrow to his forehead by two hungry cannibalistic mutants.

The second novella, "Fiat Lux," depicts an abbot called Dom Paulo, who has to admit to the abbeys a secular scholar, the Galileo-cum-Newton-like Thon Taddeo, who requests to see the memorabilia. Dom Paulo is friends with an old hermit, again uncannily similar to Leibowitz, who is said to have lived near the abbey for centuries. They discuss Thon Taddeo and the revival of science: whether the rebirth of a technology-based civilisation is going to make the world a better place, or whether aggressive inventors of Thon Taddeo's kind are going to bring back death and destruction. The hermit, who claims to be akin to the Wandering Jew and to have lived forever, thinks on a vast time scale and says he has seen the same cycle of destruction, rebirth, growth, and destruction repeated with no end. At the same time, the secular rulers of the region declare the pope a heretic and commence a war for power with the church. Despite the abbot's attempts to reconcile religion and science and maintain peace, bloody conflicts break out in Utah.

In "Fiat Voluntas Tua," the last section of the novel, nuclear weapons are reinvented, superhighways cross the desert near the abbey, and a mission to some space colonies is prepared by New Rome in order to save the Catholic Church and the memorabilia it guards. The Leibowitz/Wandering Jew figure roams the desert and witnesses a bomb strike near the abbey. Relief camps and euthanasia centres for contaminated victims of the blast are opened, and in the final attack, the buildings of the abbey are destroyed. At this moment an old mutant two-headed woman, Mrs Grales, asks to have her second head (called Rachel) baptised. Abbot Zerchi is squashed by falling stones, and among the shattered masonry, he sees an ancient skull with an arrow hole in the forehead. Dying, he watches young Rachel, with a shrivelled old second head on her shoulder, approach and give him the sacrament.

The three parts of *A Canticle* represent three stages of the eternal struggle between (re)creation and destruction, the human need to learn, understand, and build, and the equally human drive to kill and obliterate. Like all Doomsday Clock Narratives, the novel is set after the apocalyptic event and before an even greater catastrophe, and the vision of history it sketches is cyclical with an inevitable self-imposed holocaust at the end and beginning of every cycle. Living among the ruins and mutants, preserving scraps of ancient wisdom and recreating science, the characters are

aware that with each new rediscovery and reinvention they will prompt an inevitable future calamity. Striking reiterations adorn the text: buzzards that live in the desert and “lovingly” (Miller 98) feed their young carrion are mentioned a number of times, and their subsequent generations mark the passage of time. The Leibowitz/Wandering Jew figure is always important for the life of the abbey, and a long line of abbots discusses with him the eternal conflict between religion and science, spirituality and politics. Brother Francis, who finds the skull of Saint Leibowitz’s wife, Blessed Emily, himself becomes a blessed martyr, and his own skull is found in the final days of the abbey. After the final nuclear blast, humankind is destroyed—buzzards and sharks inherit the earth—but Brother Joshua and his flock head for the stars and most probably will recommence the cycle of human development and destruction.

The compulsion to destroy is, for Miller, the major trait of humankind albeit one counterbalanced with the need to rebuild and a belief in progress. Human civilisation is doomed to end in a self-inflicted disaster; its behaviour might best be described using the Freudian notion of the death instinct. In his famous essay *Beyond the Pleasure Principle*, written just after World War I, Freud redefines the instinct as “a tendency innate in living organic matter impelling it towards the reinstatement of an earlier condition” (68) and claims that in moments of prolonged stress we try to repeat the past in a vague hope to return to this inanimate nirvana, the painlessness of inanimate matter. In his opinion, mechanisms such as self-preservation, narcissism, or desire are secondary and evolved in order to obliterate the most primordial instinct of all, the wish to die. One has to admit that “everything living dies from causes within itself and returns to the inorganic, we can only say the goal of all life is death” (70). Read in the context of this theory, *A Canticle for Leibowitz* is a study of history as an inevitable, predetermined process which consists of recurrent stages: the recommencement of scientific progress, the long and slow development and advancement of science, and a traumatic outburst of violence and destruction. Thus, every era is both posttraumatic and pretraumatic; every generation is dimly aware of preceding catastrophes and the dreadful catastrophes to come. Caught in the never-ending cycles of history, Miller’s characters struggle to rediscover the civilisation of their predecessors, dating back to the days before the Simplification and, simultaneously, suffer pre-TSS seeing that their own world cannot help but repeat the very same pattern of political and military organisation which leads to war.

James Berger in *After the End* discusses the cultural representations of apocalyptic events by referring to Sigmund Freud’s changing definitions of trauma. As with Roger Luckhurst, whose reconstruction of subsequent Freudian theses concerning trauma was discussed in Chapter 1, Berger identifies three main phases in Freud’s understanding of trauma

as described respectively in *Studies on Hysteria*, *Beyond the Pleasure Principle*, and *Moses and Monotheism*. Berger discusses these phases while taking into consideration the shifting perspective on the traumatic event as it is remembered/relived/feared in each of them. In the earliest study, Freud claims that suppressed memories of trauma keep coming back as symptoms; in his mid-period, he emphasises the prominence of the death drive, which aims to reinstall the lost equilibrium; and, finally, he advocates adopting a broader perspective regarding whole societies and nations, which allows us to notice that the memory of a national trauma is latent in culture but may easily be revived when some similar nationwide threat emerges.

These three approaches to trauma are helpful when trying to understand the psychosocial dynamics of *A Canticle*. Berger's reading of *Studies on Hysteria* as a description of the trauma–repression–symptom formation chain is an equivalent of the situation in "Fiat Homo," the part of the novel which is concerned with the posttraumatic period of history. The nuclear war, which killed the majority of people on earth and destroyed the twentieth-century technological civilisation (while mutating human DNA), is nearly forgotten; in the subsequent period of Simplification, science and technological know-how were repressed and the material remnants of an advanced society destroyed. Yet, even six centuries after the blast, it is impossible to maintain the illusion that there was no war: the far-reaching consequences of it still determine human lives, with a landscape of ruins, the memorabilia, mutations, and half-forgotten echoes of past greatness all unable to go unnoticed. The repressed historical trauma comes back as symptoms: the monks recite litanies against fall-out, while blurred memories of nuclear disaster and subsequent purges are reworked in hagiographies and apocrypha. The landscape surrounding the abbey is encrypted, and the monks, despite all their superstitions and blessed simplicity, start to read the signs. Two Hebrew letters are sketched by Leibowitz on a stone for Francis: *lamed tzadek* stands for "Lebowitz," but also "make the Hebrew word for *fool* ... some fools, like Saint Francis of Assisi ... are wiser than their more learned (dare one say scientific?) fellows" (Scholes and Rabkin 221). However, they also represent something more: all "nature" is a cipher. Rocks and stones are mortar and bricks, pebbles are broken asphalt, caves are basements and shelters, mutants are victims of the radioactive contamination of old. "Fiat Homo" ("let there be man") is apparently a reference to Genesis, but ironically, this creation is but a maimed recreation of humanity.

"Fiat Lux," "let there be light" (or, rather, let there be light *again*), in the Renaissance-like second section of the novel, is in Berger-inspired interpretation an equivalent of Freud's ideas from the 1920s when "the traumatic event and its aftermath again became central to psychoanalysis but again Freud shifted his emphasis from the event to what he

considered a more comprehensible frame ... a biological urge towards equilibrium ... the death drive” (Berger 22). The life of the abbey, and the neighbouring city state of Texarkana, as depicted in this novella, are subjugated by the uncontrollable need to repeat: Thom Taddeo cannot help but repeat the discoveries of ancient physicists; Brother Kornhoer of the abbey reinvents a “generator of electrical essences” (powered by a treadmill); and the Mayor of Texarkana (through a complex network of alliances and intrigues) attempts to unite a number of states under his control, thus reinventing an American empire. Excommunicated by the church, he is forced to follow the steps of various rulers from the days of Europe’s Reformation and break with Rome. Aware of the looming danger of a repetition of, also, “the Flame Deluge” (a nuclear war) in the far future, the monks feel helpless to change the route of cyclical history. They may hope that religion and faith are going to soften the ways of political powers, but they do not really believe it. As motifs and figures from “Fiat Homo” reiterate in this part, the trauma of the past is going to come back in the future. The repetition-compulsion that Freud described in *Beyond the Pleasure Principle* rules social and political life: humanity is urged to recreate its bygone civilisation and to master the powers it possessed even at the price of repeating trauma: not in a Freudian childish game of for-da but for real.

“Fiat Voluntas Tua” (“Let Thy Will Be Done”) is a resigned fulfilment of a predictable apocalypse, and the dynamics of history (as presented in the novel) is—to quote Robert Scholes and Eric S. Rabkin’s classic, *Science Fiction: History, Science, Vision*—“from a hopeful Genesis to a resigned Revelation” (221). Just like in Freud’s *Moses and Monotheism*, where he “attempted a theory of trauma that would account for the historical development of entire cultures” (Berger 22). Miller’s final novella describes a global nuclear catastrophe prompted by transformed memories of previous catastrophe—countries and nations are doomed to repeat traumatic events from the past; repressed memories of the lost civilisation and its heritage trigger the closure of one historical cycle and the repetition of another one on another planet.

The pre-TSS depicted in *A Canticle* is thus of a special kind: experienced by some of the characters as vague premonition of calamities to come and imagined as a repetition of the half-forgotten Flame Deluge, it really defines the whole civilisation and the posttraumatic/pretraumatic culture it produced. Miller’s narrative strategy is to describe precisely a very small locale in a comparatively short time span. He does it three times, achieving the effect of presenting (albeit in miniature) the whole civilisation: first he depicts a small abbey near an old road leading from nowhere to nowhere, which is built of salvaged broken stones. The abbey, built on heaps of ruins, is in itself inspired by an old Italian monastery Miller saw during World

War II: "One of the American airmen who participated in the bombing of Monte Cassino was a young radio operator and tail gunner from Florida named Walter M. Miller, Jr." (Michaud). As the stones and the masonry are recycled, so is the story itself: the abbey is just like medieval European monasteries with novices on Lent vigils and scribes copying old scrolls, and yet it also contains bits and pieces of contemporary highway architecture reused in a primitive style. In 1200 years a very similar six-lane highway crosses the very same spot which is situated in just the right place for a major road. It is near this road, separating the ancient abbey from its modern addition, that bombs are dropped once again.

On a side road which at one point flanked the highway and led from the monastery by way of a residential suburb into the city, an old beggar clad in burlap paused to listen to the wind. The wind brought the throb of practice rocketry explosively from the south.

(Miller 209)

The Leibowitz/Wandering Jew figure offers a stable point of reference, an observer of how, from ruins to ruins, the site is transformed in the way the whole globe changes over two millennia. The reader of the novel is in a similar position: they recognise patterns and spot repetitions which, for the characters, are obscure. When Brother Francis discovers the shelter and spells out the letters "INNER HATCH SEALED ENVIRONMENT" (16), he can only cross himself, scared by the thought of the demon fall-out, while the reader knows perfectly well what must have happened to the now-ruined United States. When later in the text the awe-stricken monks listen to sermons on "the first unleashing of the hell-fire" (51) and hear about cities turning into puddles of glass and acreages of broken stone, the reader recognises images interposed from Robert Jay Lifton's *Death in Life: Survivors of Hiroshima* and John Hersey's "Hiroshima." The holy scriptures preserve memories of the Flame Deluge: "for in those days, the Lord God had suffered the wise men to know the means by which the world itself might be destroyed" (176). They also quite clearly point to twentieth-century culture, the arms race, and the Cold War.

"*Sic transit mundus*" (277) murmurs the last monk to enter the starship when he looks back at the erupting horizon. The Order of St Leibowitz launches its mission to the stars in the final moments of humanity's time on earth, and the fall of Lucifer comes as no surprise; it is the final stage of the centuries-long process of scientific progress. *A Canticle for Leibowitz* is structured as a sequence of episodes leading to this moment in classic countdown fashion: knowing the history of the last two millennia, we recognise the pattern. This inevitability makes the novel a prime example

of the Doomsday Clock Narrative: not only is the second nuclear holocaust of the far future inescapable, but so too is the first, the previous one, “our” nuclear war, ending “our” civilisation from before the beginning of the novel: the fictive Flame Deluge and Simplification are sure to happen. The setting in-between catastrophes, the obsession with deep time written down in geological strata, and the adaptation of a future perspective seen from the times after World War III, all emphasise the pre-TSS of this narrative.

The world of *A Canticle* is slowly recovering after the nuclear holocaust and cleansing from contamination. Yet mutants are born in every generation for nearly 2000 years. In the dark centuries after the Simplification, the barbarian tribes would kill them as abominations, and those who survived hid in a number of refuges. One of them, the Valley of the Misborn, is situated two months’ walk from the abbey, and the mutants are isolated from the outside world. With the passage of years, the mutations slowly disappear from the gene pool, but even just before the next nuclear holocaust, some people are still being born with mostly treatable defects, which makes it impossible to forget the previous war. In fact, thoughts of the predeceasing civilisation of proud and self-destructive scientists, who are their forefathers and to whom they grow similar, never leave the abbots. Although their names change, the abbot figure in every episode of the novel is the narrative focus and the intellectual link between the two civilisations. Their inner thoughts point to the in-between status of them all: they are continually reminded of the nuclear catastrophe, and they cannot help but wait for the next one. The abbey is doomed to fail as a go-between that might give pause to the future kings and scientists so they do not repeat the sins of their forefathers. The Order of St Leibowitz has succeeded in preserving a little evidence of the bygone scientific aptitude, but it miserably loses out to the secular leaders as far as shaping the future goes. The abbots experience the pre-TSS of the whole world.

The feeling that their own days are but a fleeting flicker compared to the vastness of deep time accompanies the characters. Brother Francis, digging in the ruins, is aware he is descending down the geology-like layers of the centuries of stone masons as he scavenges the rubble, the bonfires of the Simplification, the nuclear war, the everyday life of engineers from the period just before it. As humble as his patron, Brother Francis has learned to see his life and times as unimportant: “in a dark sea of centuries wherein nothing seemed to flow, a lifetime was only a brief eddy, even for the man who lived it” (68). Geological formations, the desert, the rubble, pieces of rock, and petrified remains of predeceasing centuries are much more relevant and important than the moment now. The long line of generations who lived between the two disasters is reduced to a handful of relics: mineralised mementoes much more enduring than, say, scrolls. At

the beginning of the novel, we read a gently funny and very down-to-earth story about Brother Francis: his attempts to outwit some wolves and to talk with buzzards, his problems with spelling, and naive ideas concerning the European American civilisation. At the end of this episode, Francis dies for his faith and is partly eaten by the mutants before the buzzards come to tear his corpse apart. It is then that his old friend, the Leibowitz/Wandering Jew, comes and buries his remains in the soft ground deep enough to protect the body from the birds. Much later, his punctured skull is transported to the abbey and joins the memorabilia, and only then does the pious but naive scrivener become Brother Francis Gerard of Utah, the martyr, and it is his mineralised skull that tells his tale, which is much more elevated than what we have read in the episode devoted to his novitiate. The above example is characteristic of Miller's narrative strategy: from the perspective of the distant future, the surviving relics of the past tell stories which the reader is forced to compare with the "original" versions they recognise. The story of a contemporary Jewish civil engineer, asked by his wife to buy some groceries on the way home (the shopping list survived in the dryness of a desert shelter), turns into a hagiography of a martyr who died for science.

The awareness that a highly developed civilisation of forebears died in the Flame Deluge despite, or even because of, their science adds to the monks' feelings of anxiety: "How can a great and wise civilization have destroyed itself so completely?" (106), they ask in amazement. Subconsciously, they know that the catastrophe is bound to happen again, and every subsequent episode in the novel is set nearer and nearer to the disaster, which gives the timeline of the story the quality of a countdown. Nobody is in the least surprised. In the moments the bombs fall for the second time, the moment of the blast is the re-enacted trauma depicted in a flow of narration where the past, present, and future blur: "your bloody hatchets and your Hiroshimas ... Generation, regeneration, again, again, as in a ritual, with blood-stained vestments and nail-torn hands ... Lucifer is Fallen. *Kyrie eleison*" (200). The disaster itself is depicted as a repetition of a previous disaster: the history of progress leading to it is also a re-enactment of an already well-known story. Miller's novel plays with the notion of the uncanny—apparently new and dangerous threats are in fact very well-known. Whatever is discovered is, in fact, rediscovered; whatever happens happens once again. The repressed memories of the end of the world return and are recognised the moment the cycle of history is completed.

M. Keith Booker in *Monsters, Mushroom Clouds and the Cold War* discusses Miller's novel in the context of other nuclear holocaust novels written in the 1950s, such as Bernard Wolfe's *Limbo*, where "the arms race is fed, not merely by rivalry between American capitalism and Soviet

communism, but by fundamental human drives toward both aggression and masochism” (76). It is human nature that fuels the war, and a Freudian understanding of the death instinct as described in *Beyond the Pleasure Principle* is helpful to understand history. Similarly, Mordecai Roshwald’s *Level 7*, where a “dystopian post-holocaust scenario [is used to] comment satirically on the social and political climate of the 1950s” (79), is also juxtaposed with *A Canticle*: in Roshwald’s text the Armageddon happens because of a slight mistake committed by mechanised weaponry. The war happens because it has to happen; all social and political life leads inexorably to its outbreak. All these scenarios recycle the idea that the course human history takes is predestined by the very crux of human nature, which is a propensity for both progress and self-destruction. Humans always build, discover, and invent, but they also fight and conquer; thus sooner or later they invent better and better weapons, and when they are capable of destroying themselves, they do so. In accordance with Berger’s thesis that “[a]pocalyptic writing itself is a reminder, a symptom, an aftermath of some disorientating catastrophe” (7), books which reflect the PRE-TSS of the 1950s are rooted in the cultural shock of 1945. Paul Boyer, in summarising reactions of journalists to the Hiroshima and Nagasaki explosions at the time, emphasised that science was held to blame for the massacre and that technological progress, once set in motion, was unstoppable and might even have already started and, therefore, would soon obliterate the whole planet.

The inevitable question—“What if the target for the bomb had been an American city?”—was answered a number of times in speculative texts describing fireballs, burning steel skeletons of skyscrapers, and radioactive dust killing American people: “this fear pervaded all society, from nuclear physicists and government leaders to persons who barely grasped what had happened” (Boyer 15). The fear was mixed with guilt—the bombs had been developed in America and dropped by the American army—and repressed. Richard Feynman, one of the youngest and brightest physicists working on the Manhattan project, tries to explain the strange mixture of emotions he felt at that time in his memoir, *Surely You’re Joking, Mr. Feynman*.

I returned to civilisation shortly after [the nuclear explosions] ... I sat in a restaurant in New York, for example, and looked out at the buildings and I began to think, you know, about how much the radius of the Hiroshima bomb damage was and so forth ... I would see people building a bridge, or they’d been making a new road. And I thought, they’re *crazy*, they just don’t understand, they don’t *understand*. Why are they making new things? It’s so useless.

Blaming abstracted human nature, which is bound to produce a self-destructive technological civilisation (and not the Americans in a particular political situation), for the nuclear holocaust was both morally easier and psychologically more demanding. If it is our unchangeable human nature that led to the nuclear war, it would soon lead to an even greater catastrophe: the end of the world, as prophesied for millennia. Therefore, the late 1940s and early 1950s in the United States' complex emotions (provoked by the memory of World War II, the fear of World War III, and religious millennial expectations of the end of the world as predicted in Christian and Jewish holy texts) added to the anxiety, which is reflected in popular culture from the period. Science fiction is but one aspect of this phenomenon; in Paul Boyer's *By the Bomb's Early Light*, pop songs—primarily in the field of country music—are discussed. "Atomic Power" by Fred Kirby, which is devoted to the threats of nuclear technology, is analysed by Boyer in the context of the fundamentalist religious beliefs of the American South. In this enormously popular song, Hiroshima and Nagasaki pay a price for their sins, but at the same time their tragedy anticipates the day of judgement when "you not know the day or the hour" (Matthew 24:36). Playing with power of the atom is akin to usurping God's own weapon, but this act of human hubris and disobedience is also part of the Great Design, the end of the world as found in the Revelation.

In the previously mentioned classic, *Science Fiction: History, Science, Vision*, Scholes and Rabkin read *A Canticle for Leibowitz* in a similar manner—they show that by ascribing to the novel the religious frame of "a song of praise" (221), one may both see the nuclear holocaust as an inevitable ending of time as found in the Bible and see "Lucifer's Fall [as] fortunate indeed" (226). Despite the massacre embodied by the image of a mother carrying her fatally contaminated baby to a euthanasia centre, despite the strong suggestion that Brother Joshua's mission to the stars will end in a recommencement of the cycle of destruction and rebirth, the religious frame of reference allows one to see the fulfilment of God's promise: Rachel, the twin of Mrs Grales (whose name suggests the holy "Grail"), is born: "a new innocence to emerge" (225), without any trace of the Original Sin. Moreover, the Leibowitz/Wandering Jew figure is allowed to die after centuries of making amends for his sins. Such a reading of *A Canticle* accounts for the gentle irony of the novel and the likeability of many of its characters. Yet, in Miller's novel the deadly cycle of history is not (and cannot be) broken; the nuclear war destroys the planet for the second time; and the knowledge that a similar catastrophe happened at least once in the past does not prevent its repetition in the future. Thus, the religious reading of the Fall of Lucifer as a *Felix Culpa* is only possible if we choose to repress the memory of so much suffering happening over and over again. In Nevil Shute's *On the Beach*, one of the three principal

characters suggests that knowing about the inevitable catastrophe might be “a grace,” some extra time we are given to prepare ourselves for our imminent death and to get used to the thought that human civilisation is going to end forever. Some other characters do think about God and redemption, but only in passing, thinking it proper to, for example, recite the Lord’s Prayer before taking the mercy killing drug. In Miller’s *A Canticle for Leibowitz*, religion has a much more important place, and yet, it does not save humankind but instead offers solace to believers as human faith and human virtue are values which the end of the world does not obliterate. In both novels, the pre-TSS the characters experience is well-founded: the history of human progress must end in one final disaster, and people know it.

“We are all survivors of Hiroshima” (479), writes Robert Jay Lifton in *Death in Life: Survivors of Hiroshima*, a book devoted to the phenomenon of “hibakusha,” which in Japanese denotes the people affected by the explosion. Lifton travelled to Japan in the early 1960s to study the long-term psychological consequences of nuclear explosions, and his book, which is a classic of trauma studies, discusses the roles of victims and survivors not only in post-war Japan but also throughout the world. His point is that all of the world suffers from the trauma inflicted by the bomb: everyone suffers guilt and shame, but we also subconsciously await the next blast. Lifton published *Death in Life* back in the late 1960s, nearly a decade after Shute’s and Miller’s novels were written, but all three books are permeated with a similar fear and remorse. The nuclear blast over Japan did take place and was human-made, and therefore, the authors claim, people are capable of self-destruction, and it may happen again. Everyone in the West is suffering from both PTSD and pre-TSS.

References to *Death in Life* and Lifton’s later work (with Richard Falk), *Indefensible Weapons: The Political and Psychological Case against Nuclearism*, which was previously mentioned in Chapter 3, help to sketch the psychodynamics of the period when Shute and Miller wrote their novels. Lifton’s research into Hiroshima survivors allows him to show that hibakusha only recover from their PTSD, or at least manage to get better, if they find themselves in an environment unaffected by the bomb. A similar psychological mechanism seems to be at work in the case of people responsible for the creation of the bomb, those who—like Richard Feynman, whose memoirs I discussed briefly—experienced repressed trauma and remorse after it was dropped on civilian targets. Their slow psychological recovery was only possible when they moved away from Alamogordo and started anew their pre-war life as academicians, and very often undertook joint actions for disarmament. Yet, in the 1950s in the Western world, people were aware that a possible nuclear war (which periodically grew more and more probable) was going to be planetwide, leaving virtually no safe harbours, no safe neighbourhoods, and no opportunities for making

amends. In *On the Beach* and *A Canticle for Leibowitz*, this repressed fear is made apparent. We see the whole planet ravaged by nuclear war, and the survivors are not given any refuge as there is literally no environment unaffected by the bomb; we follow the global catastrophe which, sooner or later, is going to kill or maim the whole biosphere. It is its inevitability and its ubiquity that results in pre-TSS, and just like global warming, it is precisely that—global.

The two novels discussed in this chapter are among the most famous disaster fictions of the twentieth century and, as such, allow us to study the emotional effect of the Cold War at a time when, for the first time in history, an anthropogenic planetary catastrophe was a possibility. Jerry Määttä, in “Keeping Count of the End of the World: A Statistical Analysis of the Historiography, Canonisation, and Historical Fluctuations of Anglophone Apocalyptic and Post-Apocalyptic Disaster Narratives,” counts them among the most influential end-of-the-world stories ever written. Moreover, Shute and Miller depict a nuclear holocaust in a complementary fashion: in *On the Beach*, we see it from the perspective of a small group of people whose stories intertwine in the last weeks before the human race dies out; *A Canticle for Leibowitz*, meanwhile, is a full-fledged narrative depicting the stories of consecutive human civilisations, each of which is doomed to obliterate itself. These two novels are model Doomsday Clock Narratives and profound studies of the pre-TSS of the Cold War period.

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5 “Imposing Fantasies on the Changing Landscape”

The Visions of John Christopher,
J. G. Ballard, and George Turner

The year 1962 witnessed two cornerstone anxiety-inducing events which had an enormous impact on the imagination of disasters. The Cuban Missile Crisis marked the peak of Cold War fears, while the publication of Rachel Carson’s *Silent Spring* opened the environmental debate by arguing that the biosphere is quickly degrading, which could ultimately lead to the end of life on earth. In the following period of about twenty-five years—ending in the next caesura with the fall of communism and the formation of the Intergovernmental Panel on Climate Change (IPCC) in 1988—disaster fictions devoted to calamitous climate change were written, often underlining the psychodynamics of an environmental catastrophe. John Christopher’s *The World in Winter* describes the coming of a new ice age and the radical shift in the global balance of power in terms of the characters’ suppressed guilt and remorse. J. G. Ballard’s *The Drought* is a study of the traumatised mind of the protagonist who, during catastrophic anthropogenic dryness, realises that human time on this planet has ended and gladly embraces death. George Turner’s *The Sea and Summer* scrutinises the impact of the approaching climate change on social life and individual well-being on two temporal planes: from the perspective of future historians who have to face a new ice age and who professionally research the twenty-first-century global warming catastrophe; and from the perspective of those people living in the twenty-first century. Interestingly, these novels were written in the last decades of the Cold War but do not describe nuclear disasters, instead focusing on planetwide catastrophes caused by climate change. And yet, environmental disasters resonate with the protagonists’ unconscious, and the conventions of Doomsday Clock Narratives serve to epitomise historical guilt rather than an ecological warning.

John Christopher’s *The World in Winter*

In the year John Christopher’s novel was published, 1962, Britain no longer had an empire: in 1947 the British evacuated India and Pakistan, and in

the next decade they abandoned most of their positions of power in Africa and Asia. The Suez Crisis in 1956, when Britain was forced (together with France) to withdraw its troops from Egypt, humiliated the British and lost them their influence in the Middle East, making it plain that their imperial days were over. The next generation, who were brought up surrounded by a welfare state set up by the Attlee government, came of age at the turn of the 1960s when the class system was beginning to crumble, and Britain was declining fast. Around the same time, in the early 1960s, one political event played an enormously important role in British social and political life—the Cuban Missile Crisis. Angela Carter, who later became a celebrated novelist, was very young at that time. In her autobiographical essays, she claims that during the fourteen days when Russia and America stood on the precipice of atomic warfare and Britain did nothing, merely helplessly observing the brewing conflict while mourning the loss of its own position as a superpower, she “came of age” as a writer and a Briton. At 22 she realised what kind of world she was living in. She later maintained that the Cuban Missile Crisis was “one of the great watersheds, certainly of my life. I think people who were born after the Cuban Missile Crisis who don’t remember, are different because it was touch and go for a minute there” (32).

Such sentiments must have been shared by many British intellectuals, which was particularly painful for those older than Carter, who (like John Christopher, born in the early 1920s) in their early middle age realised that the empire they used to take for granted was in decline. What they were left with was an outdated British ethos that cultivated good manners, reserve, and dignity in the face of atrocious disasters. This also is what one can find in disaster fiction written at that time in Britain: the master of this genre was John Wyndham, and John Christopher was among its most important exponents. They both imagined diverse calamities that humankind had to suffer, and nearly always the focus of the narration in their novels is the British, who represent the most morally superior members of humanity. The East and the South, particularly ex-colonies, tend to be very dangerous; it is there that trouble often begins. In Chapter 3, I mentioned Wyndham’s invasion novel *The Midwich Cuckoos* where England has to face a much more developed civilisation that attacks it inconspicuously and poses a deadly threat to civilised values. The invaders come from outer space, but, simultaneously, the British have to deal with “those Ivans,” nations from behind the iron curtain who are ruthless and amoral—and thus better equipped to survive. The British have to deal with the extraterrestrial danger but in such a way as not to violate their moral standards and still retain their dignity. The characters in his other invasion story, *The Krakan Wakes*, catch themselves believing that their nationality is going to save their lives, at least as far as natural disasters go. Hurricanes, tsunamis, and serious earthquakes

all occur in exotic places and not in the British Isles. Wyndham stresses the oneness of the West in their hour of need as the opposite of the uncivilised East: "the sober, sensible people of the West would have reacted wisely, and no doubt will; but the more emotional and excitable peoples elsewhere have less predictable reactions" (92). John Christopher's fiction is imbued with similar emotions: a love of "Englishness" which is defined as sobriety, sang froid and responsibility, and an instinctive fear of the ex-colonies. Moreover, Christopher's most famous catastrophe novels describe natural disasters onto which he projects anxieties plaguing the British at that time: a fear of the approaching end of Western civilisation, and nostalgia for the colonial days of the "white man's burden," mixed with a feeling of guilt and a fear of revenge. His early novel *The Death of Grass* might be read as a 1950s vision of a planetary eco-disaster viewed from the perspective of a middle-class London family. In the book, some virulent plant disease spawned in the Far East kills all kinds of grasses while rapidly spreading West. Rice and wheat wither and die, and so do blades of grass in pastures. In just a couple of years, Eurasia suffers famine, panic, and the breakdown of moral and civil laws—people even talk about plans to reduce the global population by dropping atom bombs. Christopher depicts civilisation as turning into savagery and anticipates the voices of the environmentalist debate: a few of his characters realise that, indirectly, it was human kind that was, by plundering the planet's resources like "a piggy-bank," responsible for the catastrophe.

Remorse and self-awareness characterise only his British protagonists, and only they are described in detail—most of the human race is made up of faceless, anonymous masses who live, starve, fight, and die in foreign lands. They are important just because the protagonists fear their raids, which come from the East. It is also not accidental that the blight in the novel was germinated in a remote part of Asia, as, in more general terms, Christopher imagines the Western world will be threatened by less civilised Eastern nations. Just like his predecessors at the close of the nineteenth century, the authors of late Victorian speculative literature, he thinks within the empire-barbarians framework. In Edward Fawcett's *Hartmann the Anarchist* (1892), the British empire is threatened by "Jewish conspiracies and invading hordes of Oriental devils" (Smith 489). In M. P. Shiel's *The Yellow Danger* (1898), Europe has been conquered by Japan and China, leaving only Britain able to strike back and finally come to rule the whole planet. In another of Shiel's military fantasies, *The Lord of the Sea* (1901), Europe is conquered by "the Jews," and in Robert Cromie's *For England's Sake* (1889), it is taken over by the Russians. The clash between the good, moral, civilised, and the evil, ruthless, barbaric is rendered geographically and politically.

The emotions permeating John Christopher’s less-known novel *The World in Winter* are far more complex. In this book he is also interested in an environmental catastrophe and the ensuing havoc, and he also depicts the breakdown of civilised rules and laws and the emergence of a far more ruthless and barbaric new order. In the novel we follow two married couples, originally from London, who witness the first few years of a new ice age which has resulted from some natural process: the climate change in the novel is not anthropogenic. Although postimperial Britain is contrasted in the novel with postcolonial Africa, the main theme of the novel is not a viral or military invasion coming from the South, but, conversely, it is the once-affluent North that is reduced to migrating to the South. The protagonists are London-based middle-class professionals—Leedon is a television documentary producer, Cartwell is a Home Office civil servant—and their privileged position gives them access to classified political and climate-related information. They have to watch how, during the first long and harsh glacial winter, British food stocks run low, and social unrest forces the government to impose martial law and cordon off inner London, called “the Pale,” to protect the country’s top officials against violent crowds of starving people. Leedon’s wife decides to leave him and, thanks to Cartwell’s connections, sells up and moves to Nigeria where she finally becomes a kept woman in the house of a very rich “negro.” Leedon (together with Cartwell’s ex-wife) has to follow her to Lagos where they are reduced to living in slums and begging for any kind of job as the Nigerian government has ceased to recognise European currencies and is hostile to foreigners. The white refugees from the North are mostly unemployed or given degrading menial jobs, and in the meantime, African governments are getting ready to invade and colonise Britain. The reconnaissance expedition is planned, and Leedon is offered the post of its cameraman by a young Nigerian officer whom he had helped and treated with kindness many years previously in London. The book ends with Leedon in ice-covered London deciding to join the meagre British forces of people who refuse to leave and “object to being colonised” (217) and who are led by Cartwell.

The unexpected climate change in this novel serves to expose what British intellectuals of that time chose not to think about: their repressed anxieties are depicted as calamities emanating from outside the country. Christopher’s narrative technique is to describe and create unease. The major feeling Leedon (whose point of view we follow throughout the novel) has is of a rebellion of the familiar; the world he used to know is growing uncanny. Freud’s celebrated essay “The Uncanny” (1919) provides guidelines for psychoanalytical readings of nineteenth-century Gothic literature. Yet, his major thesis that the uncanny reveals what is hidden and

thus forces readers to find what is familiar disturbingly unfamiliar is highly applicable to later anxiety narratives. What is so hostile and disturbing in the environment and other people is projected unconscious fears and desires: "Frightening scenes of uncanny literature are produced by hidden anxieties concealed within the subject, who then interprets the world in terms of his or her apprehensions" (65), claims Rosemary Jackson. She adds that fantastic literature does not create "new" fears but transforms the "real" through "discovery." Thus, very often the characters in uncanny literature discover the source of horror somewhere "outside," "beyond," "faraway," or in things which are "reversed," "inverted," "topsy-turvy." Many late Victorian fantasies take their heroes to such secluded places: Dracula's castle (where the protagonist of Bram Stoker's *Dracula* has to travel) is on the outskirts of Europe; the titular island in Wells' *The Island of Dr Moreau* is in the distant seas, and there the protagonists have to face their own fears. The realisation that the unfamiliar is the disguised familiar is a moment of intense unpleasantness: in this case, the Darwinian truth—that deep inside people are animals, have evolved, and, perhaps, can devolve back into beasts and monsters—is exposed.

Similarly, in John Christopher's *The World in Winter*, the unpleasant thought that the colonial greatness of the British was a historical accident rather than innate superiority is projected onto the changing environment. For the protagonists, nature has gone awry: climate change renders the world uncanny, and the seasons of the year feel all wrong. In mid-October, blizzards sweep over continental North America and Europe, and London is covered with snow. The following winter the Thames freezes over, and bitter winds blow through the city. People talk about a new ice age: "glaciers rolling down the Welsh mountains and polar bears sunning themselves on the ice in the Pool of London" (22). The media discuss a number of hypotheses explaining the sudden change, among them so-called Fratellini's Winter: a few years previously "an obscure Italian scientist at an unimportant conference" (6) gave a speech about a decline in solar radiation detected by satellites and his hypothesis that radiation cycles in the sun repeat themselves every few centuries. In the following months, the insolation (exposure to solar energy) of the outer levels of the atmosphere dropped before bottoming out, but there was no sign of recovery. The ice age sets in. Soon the familiar places and regions grow alien and dangerous: London's streets are festooned with thick ice; ice covers both sides of the English Channel for about a mile offshore; France is turned into frozen fields; "bands of starving Frenchmen ... of local tribes" (150) roam the Brittany peninsula; and icebergs float near the Dorset shore.

Interestingly, the characters realise that the change, which for them is an unexpected rebellion by once-tamed nature, is in fact a restoration of a previous state, an iteration of one phase in a gigantic cycle—the European

glaciers increased in the western Alps at the beginning of the fourteenth century and the first half of the nineteenth century and now are advancing again. This advance turns out to be rather huge, but, nevertheless, this change in nature (which they consider a major disaster) from the perspective of deep time might be viewed as a regular occurrence. Not only is the world not stable and friendly, but it turns out that it has never been so. Whatever is happening around the protagonists is a repetition: fairs on the frozen Thames, retreating from colonised Iceland, September-to-May winters, consecutive famines, and trying to fish underwater all take place, but not for the first time. The British realise they have chosen not to remember that their island is not immune to extreme weather and its consequences. Soon people start to die of cold and hunger; the government is evacuated; and skirmishes over food turn into regular battles and massacres. Glasgow is taken by a hungry “mob” that blames the humanitarian catastrophe on the government, and Central London is turned into a stronghold: “from ... Cheyne Walk ... Holland Park Avenue, Bayswater Road, Oxford Street and High Holborn. Up Clerkenwell ... along Leadenhall Street to take in the Mint and the Tower ... with the river as its southern boundary” (57). The names of places which, for a few centuries, have been associated with tourism and trade regain their ancient role as demarcation lines of the fortified inner city. In the silver vaults in Chancery Lane, all the governmental resources are placed under guard, curfews are imposed, and streets are patrolled just like in the distant past. This London, turned into a quasi-medieval fortress, looks uncanny: horrid and yet strangely familiar as the echoes of its barbaric past had always been lurking just beneath the veneer of a civilised city.

When Leedon comes to Britain with an African reconnaissance mission, the snow fields of Southern England are “dotted with humps and larger mounds which here and there gaped to show frozen limbs thrust out in the agony of death” (196). The most civilised country on earth has reverted to barbarism, and the imperial Britain of the glory days is turned into nostalgic memories of the refugees who live the lives of pariahs in now-hegemonic Africa. Their memories of an idealised London from before the catastrophe are their only solace, and the Africans they meet boast to have visited this Royal London of old. Leedon and the “negro” he used to know in the old days toast the Houses of Parliament, the Lyon’s Corner House at Tottenham Court Road, Nelson’s column, the Chelsea Flower Show, the British Museum Reading Room, the King’s Road, and six more London tourist sites. Leedon is in his thirties, his companion still younger, and yet the scene in the bar when they drink to the health of the imperial capital’s bygone attractions seems to be interposed from some story where very old Britons remember the glorious days of Queen Victoria’s reign: just mourning the historical decline of Britain is replaced with mourning

climate change. Interestingly, the young African is depicted as being genuinely proud of having seen London once which somehow makes him feel superior to his compatriots. Christopher’s novel means to show how arbitrary the notion of an empire is and how easily the centre and the margins can switch places, yet it is nevertheless nostalgic for the colonial superiority. London is the epitome of the persistent memory of British greatness, the city you try to forget or cover with a glacier, but cannot. The very name “Leedon” sounds uncannily similar to it, while Lagos is London in reverse, London-gone-awry, the new nightmarish centre of civilisation where the London sites—the City, Soho, the Greater London—have grotesque doubles. Following the Freudian logic of the return of the repressed, the ice-bound London reappears at the end of the novel, and the suggestion is that it may yet be the centre of some new British statehood.

Yet overall, the protagonists in the novel have to face up to the revival of the colonial enterprise, albeit in a reversed fashion as the British themselves are now on the receiving end. When the government is evacuated to the West Indies, this once British territory is considered no man’s land by African and Asian states. It is with bitter irony that Leedon participates in a discussion with his well-connected African friend who wonders if the British Isles should be considered a part of Europe, which is under joint administration. “The ports represent a claim on continental Europe, but there is no foothold in Britain. There has been no sovereignty there since the Government left the country” (143), says the Nigerian. Ghana and Egypt are believed to be preparing an expedition to Britain, and Nigeria wants to get there first in order to lay claim to the Isles when the glacier recedes. They already plan to send traders and missionaries to Britain in a few years’ time, “with gin and bibles and beads” (210), Leedon comments bitterly. The northern states sold Africans everything sellable, even atom bombs, “before the crack-up” (207). Pound Sterling is worthless since the Stock Exchange suspended trading, and the repatriates find themselves penniless while the riches of their homeland are destroyed, stolen, or sold off as if in an act of uncanny revenge by history. Victorian and Edwardian art sells in the former colonies; the new rulers of the world are not sophisticated enough to appreciate abstraction, Leedon seems to be saying. European “artificial” primitivism makes them uncomfortable, at least Leedon (for whom Africa is nothing but primitive, and he knows it) thinks so. Reduced to living in Lagos, Leedon despises his new homeland. The Nigerian army, with its gaudy billboards and corrupt recruiting officers, refuses his application, and his humiliation is extreme.

Ironically, it is his selfless kindness (shown in the long-gone days of British cultural supremacy to an African who felt lost and lonely in London) that wins him a post as a cameraman at the African mission to the British Isles. Entering the ice-bound Western Europe, which is empty

and frosty and sparsely populated with emaciated and hostile natives, is for him like a journey back in time to the period when a still barbaric England was being conquered by the more civilised peoples from the South. Leedon camps on the ice fields near the mouth of the river Thames, bringing to mind Conrad’s colonial classic, *Heart of Darkness*, and Marlow, Conrad’s protagonist, who having returned from Africa waits with his crew to enter London’s harbour. These are the last days of Queen Victoria’s reign, and Marlow knows that the London he is observing is “the biggest, and the greatest, town on earth” (Conrad). Yet, he also realises that, still twenty centuries earlier before the Roman invasion, this plot of ground was “one of the dark places of the earth” (Conrad). *Heart of Darkness* contrasts the metaphoric light of civilisation with the darkness of the wilderness which is being colonised and, at the same time, points to the arbitrariness of this opposition, and *World in Winter* reiterates the story replacing metaphorical darkness with actual ice. Having returned from Africa, Marlow is waiting for the tide to turn and telling the crew the story of a time long before the British empire:

I was thinking of very old times, when the Romans first came here, nineteen hundred years ago—the other day ... Light came out of this river since—you say Knights? Yes; but it is like a running blaze on a plain, like a flash of lightning in the clouds. We live in the flicker—may it last as long as the old earth keeps rolling! But darkness was here yesterday. Imagine the feelings of a commander of a fine—what d’ye call ‘em?—trireme in the Mediterranean, ordered suddenly to the north ... Sandbanks, marshes, forests, savages—precious little to eat fit for a civilised man, nothing but Thames water to drink. No Falernian wine here, no going ashore. Here and there a military camp lost in a wilderness, like a needle in a bundle of hay—cold, fog, tempests, disease, exile, and death—death skulking in the air, in the water, in the bush. They must have been dying like flies here.

(Conrad)

England used to be the “dark” uncivilised place, and now it is going back to that very same status. The civilised and sophisticated commander, who has to endure the ugly land, dangers, lack of hygiene and provisions, is like Leedon himself: jobless, hungry, and attacked by dogs in a rat-ridden, stinking Lagos slum.

Similar echoes of the imperial past “in reverse” abound; in Africa, Leedon encounters numerous refugees treated in the same way the British used to treat immigrants. Listening to the conversation of white schoolboys boasting about being friends with a Chief’s son reminds him of his Jewish

schoolmates who, in the 1940s, sought refuge in Britain. Leedon was 13 at that time, and he understood the boys were pretending but was not aware why they had had to flee the continent. Although he is reluctant to use the term "holocaust," even in his memories, he confesses to not having known enough to prevent him despising them at that time. The new ice age is like a moral lesson the British are given to see what they are really like—the suppressed colonial guilt, the anxieties connected to the postimperial future, and the humiliation of having lost their say in world politics are all embodied in the uncanny weather. Fratellini's winter is the epitome of their hubris: when the London officials, scientists, and reporters hear the term for the first time, they consider the hypothesis "obscure" and its author "unknown," apparently not because he presented it at a small, unimportant conference but rather because he was Italian and the conference took place in the very south of Europe, and not in, say, Cambridge or Oxford. "We are not too proud to accept aid" (232), says Britain's new leader at the end of the novel when he talks to the Nigerian officer about the future. The resistance, who control London, survive using pre-war stocks, but they plan to negotiate with African states and build their political position in the changed world. As in this novel, whatever happens happens again and whatever seems new is an iteration of some historical event: the Nigerians defeated near London, who are sent back home with the diplomatic mission, are compared to the Normans invading Britain in 1066.

Climate change in *The World in Winter* is therefore an external expression of anxiety rather than the source of it. The novel does not have all the features necessary to be called a Doomsday Clock Narrative—there is some hope for the future recreation of civilisation—and yet, by depicting a catastrophe in terms of humanity's reaction to trauma, its analysis adds to my argument. In *The World in Winter*, our safe and well-known world of nature becomes hazardous, and yet the weather-connected calamities the protagonists endure are projections of their repressed emotions. The main ordeal-cum-humiliation is described in painful detail as resulting from Fratellini's winter conditions which turn the British into pariahs. Interestingly, the protagonists are aware that what is happening to them is a repetition of historical events, processes, and attitudes; they feel trapped in a morality play where one must suffer just like one made other people suffer. The novel reflects the fears and anxieties of the period it was written in, and it uses climate change as a means to show how people cope with the unpredictability of nature and of history.

J. G. Ballard's *The Drought*

In the African part of *The World in Winter*, the protagonist and his girlfriend find themselves in the middle of a hostile, dirty, and dangerous city, Lagos. Transported overnight from the ice-bound London, with nothing

but some worthless money, they roam the outskirts of the city and try to sleep in the open, but the police threaten to sic their dogs on them. Many “white folks” with no money “have been breaking into houses, stealing and such,” a black constable says, explaining why the suburbs are routinely patrolled and cleansed of white vagrants. The reversal of social stereotypes is complete when he points to his Alsatian: “trained on hunting black men ... in Sierra Leone—but he finds no trouble in switching colours” (99). The dog, in this nightmarish urban area in the middle of an African night, becomes a creature from the depths of the collective British unconscious; it embodies the return of repressed postcolonial remorse. The evil inflicted by the colonial enterprise is exposed by the changing climate and ready to “switch colours” and leap on you. Similarly, dogs attacking a group of plastic mannequins in an arid desolate urban area are observed by the numb protagonist in J. G. Ballard’s disaster fantasy, *The Drought* (1965). Stray dogs left behind by their former owners during a frantic flight from the dire consequences of climate change tear apart human simulacra, dummies from broken shop windows. Scraggy dogs dragging headless mannequins amidst dust, old cans and pieces of broken furniture in an empty, plundered city, where rains ceased to fall many years previously, makes for a powerful image. The novel’s world is rendered uncanny by drought: the remnants of everyday objects such as modern cars and buildings, machines, merchandise, and luxury objects are all covered with dust and sand. And such a ghost city is where the protagonist, Dr Charles Ransom, is confronted with the prospect of his inevitable death and that of civilisation itself.

Both Christopher and Ballard describe in detail the landscape (and numerous cityscapes) transformed by climate. In *The World in Winter*, the characters have to deal with historical guilt, wounded pride, and anxieties for the future, but finally they resolve to adapt. In *The Drought*, the protagonist embraces the end of the world with relief, anthropogenic climate change being for him the involuntary suicide of the human race, and the frantic violent world of people is slowly replaced by calm landscapes of mineralised waste. Christopher’s characters struggle and fight: they deal with very strong emotions exposed by dire weather. Ballard’s brooding protagonist accepts the end, and motivated by strange compulsions, he grows more and more alienated from other still-struggling survivors.

The human world in the novel is on the brink of extinction because of pollution and some spontaneous chemical reactions in liquid refuse. The oceans, meanwhile, are covered with a thin film of indissoluble long-chained polymers that stops the process of evaporation. No clouds are formed, and the climate deteriorates rapidly. A global drought leaves people in a life-or-death search for water. The lack of rain and the resultant slow death of the world’s rivers and lakes slowly makes the continents uninhabitable. Violence erupts and people panic, trying to get to the coasts. Most of them die fighting one another in the first few years, and the rest organise

small (and constantly shrinking) communes or fishing villages, working hard to obtain freshwater from the polluted seawater. Strange cults are born; insanity has become the norm; and somewhere in the arid interiors, even stranger communities manage to survive in the ruins of late capitalist cityscapes. On the seashore, postapocalyptic communities start civilisation anew but in a diminished, grotesque version, and Ransom perceives it as an eternal regression into the past of human societies. Ballard does not show the global apocalypse but concentrates on the perspective of Ransom, who is one of the last people to leave the shrinking lake and one of the first to come back from the shore after a few years. Interestingly, the interior of the continent, just like neoprimitive villages at the seashore, also regresses and the landscape starts to resemble that of centuries earlier—"zones of time future" seem interposed from the distant past. Looking at the dusty villas along the now-dry river bed, one of the characters remarks: "They look like mud huts already. We're moving straight back into the past" (46). Therefore, Ransom's journey to the heart of the desert can also be read alongside Conrad's *Heart of Darkness* as a story about a pilgrimage to a prehistory retained in the collective unconscious of the human race. The changing climate triggers a compulsion to return and repeat—the mechanism described by Freud in *Beyond the Pleasure Principle*—which, as already stated in Chapter 4, helps to understand the psychodynamics of Domsday Clock Narratives. Ballard's book uses the conventions of disaster fiction in an inventive new way: the world ends because of human-made pollution, and the demise of civilisation is irreversible, at least from Ransom's perspective.

Despite the allusion to rain in the last sentence of the book—"he failed to notice it had started to rain" (188)—the final disaster is unavoidable, and Ransom's decision to stay in the arid interior of the continent is motivated not by his belief that one can survive there but by his compulsion to become one with the sand, dryness, and heat. The phrase quoted above is very telling; the stress falls on his failure to notice the rain and not on the rain itself: what he notices is "[a]n immense pall of darkness ... over the dunes" (188). Ransom feels that in this darkness "he had at last completed his journey across the margins of the inner landscape" (188), arriving at a point of no hope and no pain, the final demise of himself and the world. He considers the drought the fulfilment of humanity's unconscious desire for the absolute nirvana from before life commenced. Civilisation is, to paraphrase Freud, the ultimate source of discontent, and people long to be taken back to pre-human and pre-biological times, to the quietness of inorganic matter described in *Beyond the Pleasure Principle*. In Ransom's mind the landscape and his own psyche blur. Moreover, the whole novel is narrated exclusively from the perspective of Ransom with frequent passages in free

indirect discourse with apparently objective descriptions which are in fact filtered through his mind.

As early as the opening chapter of the novel (titled “The Draining Lake”), Ransom is in the disaster area, which used to be a rich lakeside suburban town. He notices dead birds floating in water, while the mud-caked bank is littered with pieces of paper, driftwood, and plumage, and humps of damp mud emerge from the centre of the lake. Ransom watches the evacuation of the city, but, driven by a strange compulsion, he does not go himself. The wasteland around him is in full accordance with the inner landscape of his mind: “[t]he slopes of mud, covered with dead bodies of dead birds and fish, stretched above him like the shores of a dream” (10). As this passage is focalised by him, this “dream” stands for his dreams, and his unconscious—projected onto reality—and the dying ecosystem gives him the uncanny feeling of recognising the dream, which may explain the nature of his compulsion to stay. Ransom relishes the recognition of himself reflected in the landscape. He “had at last found an environment in which he felt completely at home, a zone of identity in space and time” (13). Moreover, the draining lake and the drying river expose muddy patches and impassable marsh areas, thereby isolating the few survivors, enclosing them in private zones—human contact, human community, and human civilisation end. According to the protagonist, everybody would soon literally be an island in an archipelago. This reversal of John Donne’s famous metaphor suggests more a mild celebration of the coming demise than an expression of anguish.

The few people whom he notices—escapees emptying the chemical closet from their van into the drying river, people who must have dumped oil into the river (the dying birds’ feathers are caked in oily fluid), people sitting around burning garbage, people in numerous cars in gigantic traffic jams on the roads leading to the ocean—represent a civilisation rushing headlong towards annihilation. Ransom has “always thought of the whole of life as a kind of disaster area” (20), and “always” in this sentence is the operative word. Only now is his latent longing for the end epitomised in the catastrophe which people have inflicted on the planet. It is the death-oriented civilisation which, by bringing about disaster, “was imposing [its] own fantasies on the changing landscape, as he himself had done” (30). His own fantasy from before the catastrophe, “of isolating himself among the wastes of the new desert, putting an end to time” (81), is now coming true all around him. Ballard obsessively describes muddy areas littered with dying birds and dying fish; coated in oil and poisoned with pollution, these creatures embody the death drive which makes the human race destroy itself and the planet.

These iconic descriptions of dead fish-strewn wastelands bring to mind Rachel Carson’s report on an ecological disaster in Canada where thousands of fish were killed by pollution. Carson’s *Silent Spring* had been published, very enthusiastically reviewed, and very fervently criticised just three years before Ballard wrote *The Drought*, so it is possible that the author actually read the book. The setting of *The Drought* seems strangely abstract and detached from any real-life context—we learn that Ransom used to live near a big city, Mount Royal, but we do not know where Mount Royal is, and yet this name is a word-to-word translation of Montreal (so the setting may or may not be inspired by Canada). Daniel Cordle, in “In Dreams, in Imagination: Suspense, Anxiety and the Cold War in Tim O’Brien’s *The Nuclear Age*,” notes that the iconic “mesmerizing Cold War ... image” (101) of an explosion, familiar to disaster fiction fans, is often placed under erasure; for example, the episodes described are mental, not physical, events. Disasters have infiltrated the cultural imagination by emblazoning in people’s minds iconic images, Cordle is saying, and the same is true in the case of an ecological disaster icon created by Carson and disseminated in books and movies: muddy riverbanks, dead fish, oil-covered birds. Ballard resorts to this icon to emphasise that *The Drought* depicts the ultimate disaster: our internalised image of the end is projected onto the landscape; the final disaster is unavoidable in reality because it has already happened in our minds, and we have to externalise it sooner or later. Thus, *The Drought*, like other Doomsday Clock Narratives, shows that the imminent demise of humanity is certain, although this is done from a very subjective perspective.

Moreover, in *The Drought*, we are undoubtedly dealing with two disasters: one in the recent past, and the second in the near future. Driving to the ocean through deserted dried-up farmlands, Ransom sees thousands of dead cattle in the dust. Losing their farms and livelihoods, and having to abandon their houses, was a personal end of the world to each of them. Turned into climate refugees and fleeing to more privileged geographical regions, they became like the figures they used to watch on the evening news in reports covering natural disasters and relief initiatives. In the following years, in refugee camps on the coast, hundreds of thousands of people struggle to survive, but, with time, it becomes apparent that they are failing: the beach is a waiting ground and their purgatory. Subliminally they know that they are waiting for the final catastrophe, the extinguishing of life. Similar to the “intrusive images” of the traumatic situation which for years haunt victims “engraved in the mind under distinct conditions, etched in by the heightened adrenaline of the physiological reaction to bodily stress” (Luckhurst 147–148), Ransom experiences flash-forwards of oncoming trauma. In *The Drought*, the source of the recurring intrusive images is the future, as Ransom recognises snapshots of the future hidden

in the landscape or painted by the Surrealists. The earlier catastrophe has made him alert to the symptoms of the next one: in this respect, the novel is thus a model Doomsday Clock Narrative.

Additionally, Ballard's images are very often constructed in reference to geology: Ransom is interested in fossils and actually notices places and arrangements of objects which will become future fossils. He keeps a bit of limestone on his desk, “the fossil shells embedded in its surface bearing a quantum of Jurassic time like a jewel” (15). Espying accumulating rubbish (discarded cans and cartons, sunken yachts and barges embedded in dunes of drying mud, the bright bones of dead cattle covered with dust, and hundreds of cars with their windows smashed and covered by piles of settling ash), he imagines the detritus fossilised and turned into hills and cliffs. Burnt-out orchards and groves of brittle trees seem to him “like remnants of a petrified forest” (94). This simile suggests not only Ballard's indebtedness to Surrealism, but also the fact that the landscape (which is in the process of mineralisation) looks like an echo of the distant past. Organic matter always goes back to its primordial, inorganic form. What Ransom is able to grasp in the moment, now—between the catastrophes—is the two landscapes coexisting; he can discern from his environs what the past and the future look like simultaneously: the river is turning into a ravine, and the lake is being transformed into a chalk cliff. The white dunes of the lake are made entirely of the ground-up skeletons of fish. Geology and topography are of the utmost importance in the novel; out of its forty-two short chapters, nearly half bear titles that refer to their setting: “Dune Limbo,” “The Lagoon,” “The Oasis,” “The Bitter Sea,” “The Terminal Zone,” “The Coming of the Desert” are but a few examples. These titles describe locations and often suggest that the places are disaster areas which makes *The Drought* akin to other Doomsday Clock Narratives which often contain geological metaphors.

What naturally follows are anticipations of the post-human future. *The Drought* is set in the twilight of human civilisation, but the days after the end of humanity have already been glimpsed, and their pictures can be seen encoded in the changing landscape. The future is more important than what Ransom is experiencing now, and it becomes a vantage point from which our present seems to be the past. With each passing dry year, the face of the earth is slowly being transformed into its future true self; gradually Ransom can spot places which look right to him, and he recognises their surreal serene beauty. Salt dunes running for miles along the coast and extending into long salt flats are bathed in a pale light, and their crests are touched with white streaks when the liquid evaporates. The empty, cool landscape is devoid of human presence, and near the pools of brine, among saline hills, new ecosystems emerge—it is in what used to be the ocean bed that Ransom sees the one and only image of wildlife which is not polluted,

sick or dying—gulls diving for fish. Looking at brine seeping away in the grey light, like immense “sheets of polished ice” (111), is looking with the non-human eyes of somebody in the future. The seashore becomes white salty deserts, while further inland, Ransom encounters fields of sand mingled with fish bones and mollusc shells, and over them the dust is churned into soft plumes. It is there, in the dry, sandy plains which strike him with their serenity, that Ransom lives through the moment of illumination: the post-human future is the platonic ideal of the world with every object and every landscape in it how it should be. He feels he is being carried “forward into zones of time future where the unresolved residues of past would appear smooth and rounded, muffled by the detritus of time, like images in a clouded mirror.” By contrast, the half-covered cars in the street look like “idealised images of themselves, the essences of their own geometry, the smooth curvatures like the eddied flowing outwards from some platonic future” (152–154). The “clouded mirror” and the “eddies from some platonic future” similes show that the reality of these hectic times of climate change that Ransom is living through is not worth saving, and neither were the pre-drought modern times other people want to return to. From the perspective of the future, seen “through a glass darkly” (Corinthians 13:12), they resemble shells and fossils. The inorganic mineral world of the future is already here; it can be glimpsed in the “essence” of objects, and, when it comes, they will no longer be technological waste. In the post-human eyes, “the residues of past” (which is our reality) need to be resolved and worked through, and only then is the world going to make sense. Therefore, *The Drought* follows the pattern of Doomsday Clock Narratives by attempting to describe the human era from a post-human perspective. The deserted cars, the salty dunes, and the dried riverbed are from this perspective uncanny—they are puzzling elements of an unknown future and, simultaneously, well-known symptoms of the drought and the consequent collapse of urban technological civilisation. In one of the first chapters in the novel, we see Ransom on a boat still floating on a draining lake. He looks like “a sea-faring Nordic anthropologist” (14), and this simile suggests what kind of focaliser Ransom makes for: he systematically studies the landscapes around him looking for meaningful objects and then tries to interpret the world. The prevailing feeling of the uncanny in the novel—one more feature which Doomsday Clock Narratives have in common—results from the dual nature of objects which become clues. Samuel Francis, in *The Psychological Fictions of J. G. Ballard*, calls *The Drought* a novel about the unconscious and “the future” (78), and I agree that in order to grasp the meaning of Ballardian landscapes, one needs to work through them. When the duality is resolved, the uncanny nature of things and creatures is apparent.

In the opening part of the novel, when there is still some water in the draining lake, thousands of birds are dying. A young boy who also refuses to depart for the ocean shore, but who persists in staying inland, tries to wash them in the precious little water he can salvage. Holding a dying bird by its outstretched wings, he looks like “a land-locked mariner and his stricken albatross deserted by the sea” (24). It is worth noting that this simile comes from Ransom, and it is Ransom who sees in the bird the epitome of burden and guilt: the reference to Coleridge turns the boy into an Ancient Mariner figure; his attempts to keep the twentieth century alive result in horror. Ransom experiences the uncanny a number of times, and these are rendered in his Lautéamont-like similes where the animate and the inanimate resemble one another, and the recycled pieces of rubbish are like ghosts of olden days. For example, the shack he builds himself at the ocean shore from “rusty motor-car bodies” resembles “the carapace of a cancerous turtle” (117), which blends a number of contrasting images: at first we imagine a shack, then cars, then bodies, then a dying animal. It is their juxtaposition that produces the uncanny effect, a strange and anxious feeling of having encountered familiar objects in an unfamiliar context. A similar thing happens when, having returned inland after years of absence, Ransom sees the city of Mount Royal transformed “into a prehistoric terrace city, a dead metropolis that turned its forbidding stare on them” (157). The contemporary city, once bustling with life, has turned into a dead city from centuries before and then is discovered to be living some ghostly life as it looks at Ransom. Francis suggests that such Ballardian landscapes should be deciphered in the manner in which psychoanalysts find the latent meaning of a dream by analysing its content. When analysing Ballard’s uncanny images, one discovers a longing for death: mannequins in the Plaza of Mount Royal are like “the vanished people of the city” (171). The mannequins are superior to humanity; the end of the human world, caused by anthropogenic climate change, liberates the simulacra and leaves them to inherit the earth. Thus, *The Drought*—like other Doomsday Clock Narratives—does contain frequent uncanny scenes and images, but they signify the bliss of the inorganic future, not an anxiety brought on by the prospect of death.

The Drought is a novel about the twilight of human civilisation, and, moreover, it contains speculations as to what the post-human era would be like. The far future would probably be very much like our distant past, at least that is what Ransom thinks. Long epochs, when earth was a quiet mineral realm with no human observers to measure time, are going to repossess the planet. The last few thousand years of human civilisation will seem fleeting and insignificant in comparison with deep time. The slow loss of water in the land symbolises, for Ransom, the evaporation of human

time and of the cause-and-effect chains of human endeavour, as in the past the incessant lateral movement of the river was like “an immense fluid clock” (13). Before the drought, water and its flow forward stood for the linear time of development and progress, the time of people, suggests the narrator. The arid future of the empty planet is going to be timeless again, and what we see now, during the eponymous drought, is the gradual transition from the human to the post-human perspective, from the apparently linear motion of time to timelessness. Therefore, what the novel records is the countdown of humanity’s remaining measurable moments.

In the book there are numerous images of counting down years and recording the changes they bring: in the previous two decades, there has been less and less seasonal rainfall, more and more areas have been turned into arid ravines, more and more tributaries of great rivers have dried up. Subliminally, people are getting ready for their own end: Ransom himself is aware that soon his existence will be turned into an unending sequence of days full of chase, and then he will face “a sharply defined quantum of existence” (39) in the last moment of “the absence of identity beyond both birth and death” (53), just before the final catastrophe. Such a thought tantalises Ransom, and he considers his return journey up the drained river an expedition into the future. The prevailing feeling that the catastrophic future is drawing near, and we are now counting down the remaining days of the human era, makes *The Drought* a model Doomsday Clock Narrative; the novel is precisely a chronicle of this countdown. Yet, in the subjective perception of Ransom, the inevitable future is not to be dreaded, quite the opposite; the acceptance of the coming demise of human time and human civilisation feels liberating. Humanity, which seems to be possessed by the death drive, should vanish from the face of this earth and regain the lost nirvana of the inorganic world. Thus, *The Drought* reiterates the Doomsday Clock Narrative motifs: it depicts characters who have experienced disaster and know the final—unavoidable—calamity is approaching; the world is depicted as uncanny; geology and inorganic matter are of the utmost importance; and the days to the end are being counted down. What is idiosyncratic and new is the lack of apprehension on the part of the protagonist: Ransom will embrace his own death gladly. Therefore, *The Drought* is an ambiguous novel—it depicts traumatised people who have witnessed a climate catastrophe and are reduced to being homeless refugees waiting for certain death, and it refrains from painting the protagonist as stressed.

Nearly two decades after *The Drought*, Ballard published *Empire of the Sun*, his quasi-autobiographical novel whose teenage protagonist spends the war in a Japanese POW camp near Shanghai. “I have often thought writers don’t necessarily write their books in their real order. *Empire of the Sun* may well be my first novel, which I just happened to write when I was

fifty-four” (Self 360), he repeatedly stated in interviews, referring to his war experience as being the key to his fantasy fiction, and his war memories as the source of his climate disasters. Apparently sound, this statement can be easily subverted—perhaps it was his expertise achieved in the twenty years of writing disaster fiction that allowed Ballard to depict the war as a surrealist disaster. Such biographical enigmas notwithstanding, the similarities shared by Ballardian disaster area landscapes is striking:

The Drought: the road appeared to have been under a heavy artillery bombardment. Loose kerbstones lay across the pedestrian walks, and there were gaps in the stone balustrade where cars had been pushed over the edge into the river below. The road was littered with glass and torn pieces of chromium trim.

(78)

Empire of the Sun: the devastation caused by the American bombing lay on all sides. Craters like circular swimming pools covered the paddy fields, in which floated carcasses of water buffaloes ... A line of military trucks and staff cars sat under the trees, as if dismantled in an outdoor workshop. Wheels, doors and axles were scattered around the vehicles ... torn away by the cannon fire.

(206)

The first landscape is dry and the river drained (which we know from the rest of the book), whereas the second is water-soaked and decaying. The drought rendered the disaster more aseptic and mineral-like—the pure skeletal remains of civilisation are already turning into future fossils; the fields of war are disgustingly organic. Yet both images reflect each other; they may well be of the same place at different moments in time. The similarities between the novels are not limited to their landscapes: in both stories, there is a pensive thirtyish character with a PhD called Dr Ransom, and in both, the protagonists live in makeshift sheds constructed from recycled waste. In *Empire of the Sun*, it is a cubicle “strengthened [by] stringing together a worn shawl, a petticoat and a lid of a cardboard box, so that it resembled one of the miniature shanties that seemed to erect themselves spontaneously around the beggars of Shanghai” (139). Imagining life after the climate catastrophe, Ballard reiterates this depiction; in *The Drought*, Ransom lives in a similar shack built from rusty motorcar parts and “sheltered from prevailing easterly winds by the flat blade of the rudder” (117). The characters are forced to live on burial grounds where disaster victims are laid to their eternal rest: in *Empire of the Sun*, inmates at the prison camp die in their hundreds and are buried in close proximity to the barracks where the living sleep. In *The Drought*, survivors from the shanty

town on the coast are overwhelmed by a sense of remorse as "the spectres of the thousands who had been killed on the beaches, or driven out in herds to die in the sea [haunt] the bitter salt" (126). The characters in both books react to the massive death toll with numbness; the massacres seem surreal, while anxiety, panic, and grief are repressed.

Empire of the Sun and *The Drought* complement each other to produce a compelling picture of a disaster area composed of contemporary obsessions: Ballardian landscapes are traumatic and pretraumatic images, intrusive flashbacks, and surreal flash-forwards, references to the past and projections of the future. The critical cliché that Ballard started his literary career as a juvenile science fiction writer of disaster fantasies and only later grew up to write a mature, realist account of the disaster which shaped his personality—World War II—is a patent misinterpretation. His disaster fictions and his war fiction are in fact equally valid studies of "inner space," the timeless mindscape of contemporary humans who live in a world horribly reshaped by war and the use of weapons of mass destruction and driven by death instincts. This world is doomed to perish—due to another war or an ecological disaster—which will re-establish the equilibrium that people subliminally crave. In 1962, in an article published in *New Worlds*, an avant-garde literary magazine, and titled "Which Way to Inner Space," Ballard postulated that science fiction should be "more and more concerned with the creation of new states of mind" (197) taking inspiration from the movies, which are capable of showing highly subjective landscapes. Such movies, and surrealist paintings, are correlative; they can investigate the inner space of the human mind, and *The Drought* does the same.

Ballard's fiction follows Sigmund Freud's idea that the unconscious is far more powerful than the conscious mind. This unconscious is timeless and has the ability to store all memories forever. "In mental life, nothing which has once been formed can perish—everything is somehow preserved, and in suitable circumstances it can once more be brought to light" (*Civilisation and Its Discontents* 69), claims Freud. In *The Drought*, in the final moments of human linear history, images from the past are brought to light and projected onto the landscape, which becomes a cipher: one can deduce its meaning by trying to identify them. In the desolate postapocalyptic landscape Ransom finds inland near the shores of a drained river, a metal windmill holds on to its rusty vanes like a cipher; the windmill is a reminder of the long-gone past; and Ransom does not know its present significance but guesses there must be one. Mike Halliday, in "J.G. Ballard and the Vicissitudes of Time," discusses "an eternal present" in Ballard's prose, where "our passage through consciousness" (112) is made possible by mythologies we construct from such images. Some of them are derived from surrealist paintings or literature: *The Drought* persistently recycles images of guilt, desolation, and entropy already present in culture to create

a landscape which reflects the inner space of the protagonist. According to the theory employed in many Hollywood films, “post-traumatic stressors make people vulnerable to Pre-TSS” (Kaplan 5). The victims of climate-caused pre-TSS in movies tend to have already been traumatised before the catastrophe. In Ballard’s fiction, this cliché is subverted and the relationship between World War II traumas epitomised by the death drive of the contemporary West and the imagination of (climate) disaster in the near future is complex. Calling him “a radical Surrealist historiographer” (219), Jeanette Baxter proves that Ballard’s technique is to imaginatively reconfigure historical narratives “in order to access the historical unconscious ... recover latent material” (219). Read in such a critical framework, his climate fiction is concerned not with the future of humankind but with repressed traumas in the timeless unconscious of people. The most important single moment in the history of the twentieth century, according to Ballard, is the series of nuclear attacks of 1945, which he remembers from his childhood spent in South East Asia. The invention and use of atomic bombs signify the moment when the aggression and self-destructive drives latent in Western people become apparent, and Western civilisation embarked on a path leading to self-annihilation: via thermonuclear war, or simply by ruining the planet.

The Drought is nowadays often referred to as an early example of climate fiction which accords with Jim Clarke’s much-quoted (also in this book) statement from his article “Reading Climate Change in J.G. Ballard”: “[b]efore there was climate change, there was nonetheless climate fiction” (7). Yet, using the categories of “before” and “after” while talking about the novel, which depicts the timelessness of trauma embodied in inner space is problematic. Calling *The Drought* cli-fi and calling it a Doomsday Clock Narrative are both well-meaning overstatements: the book is nearly (and yet not quite) climate fiction, and it is nearly (yet not quite) a Doomsday Clock Narrative. By attempting to picture the workings of an unconscious mind as projected onto a landscape, Ballard subverts the notions of “past/future” and “change,” the definitions that these literary labels depend on. His fiction blends genres: it is intellectually akin to autobiographical war fiction, resembles nuclear disaster fiction in its certainty of the coming catastrophe, but it also points to climate as a possible means of bringing about the self-imposed demise of humanity.

George Turner’s *The Sea and Summer*

In the “Postscript” to *The Sea and Summer* (1987), George Turner reflects on science fiction as a means of discussing, or even predicting, the future: “this novel cannot be regarded as prophetic; it is not offered as a dire warning. Its purpose is ... to highlight a number of possibilities that deserve urgent

thought” (363). He then goes on to enumerate issues which in his opinion are going to determine what life in the twenty-first century will be like—population, food, employment, and finance. These are the spheres which he pays most attention to. Discussing possible paths of development (and plausible sources of distress) for these areas, he voices a telling reservation: “two other major matters must be considered by today’s futurologist: *Nuclear war ... [and] The Greenhouse effect*” (364). These two factors pose, in his opinion, two main dangers which may render all predictions and prognoses irrelevant and definitively change the future of our planet. It is significant that Turner wrote this in 1987, just before the end of the Cold War and the collapse of the Soviet Union, and a year before the IPCC was formed in 1988 by the World Meteorological Organization and the United Nations Environment Programme. The last years of the twentieth century marked a radical change in what is considered the main threat to the well-being of humanity: atom bombs have been replaced by catastrophic climate change. One cannot help but mourn the return of the nuclear threat in Eastern Europe in spring 2022, yet at the turn of the 1990s, this particular nightmare seemed to be receding into history, something which was accompanied by a realisation that earth’s climate is rapidly changing.

In the novel, Turner depicts a future shaped by global warming where atomic bombs are never used, but climate change is drastic and affects literally every aspect of human life. His literary technique is an extrapolation—he projects already discernible tendencies into the future and attempts to realistically judge how they may reshape civilisation. The picture he sketches is of a troubled, dangerous world that is waiting in the wings and which, in coming centuries, may lead to the final demise of humanity. *The Sea and Summer* is a frame narrative made up of two storylines set in mid-twenty-first-century Australia and, centuries later, among the “Autumn People.” Both these stories depict societies who struggle with weather calamities: the Autumn People are aware that a new ice age is coming, one which will end their civilisation and possibly all human life on earth. In the ruins of what is now Melbourne, a group of archaeologists, historians, and writers study excavations of the mid-twenty-first-century ocean-flooded Greenhouse Culture. *The Sea and Summer* is the title of a book one of them reads—a saga of the Conway family set in the 2040s, 2050s, and 2060s. In this embedded story, we see Australia in the midst of climate change, massive social unrest, and economic crisis. At that time, 90 percent of people, known as the “Swill,” are unemployed and squeezed into gigantic dilapidated tower blocks which are frequently flooded. The remaining privileged few, the “Sweet,” live in guarded suburban districts, have jobs, receive an education, and try to rule the country keeping the “Swill,” who are organised into tribe-like groups of tower block inhabitants, under control. *The Sea and Summer* describes the lives of a “Sweet” family who

are deprived of their status, become “Swill,” and have to fight for their survival.

Turner’s book is didactic, though he refuses to call it “a dire warning.” He does, however, choose the greenhouse effect, a subject which was at that time marginal in the public discourse, and creates a disturbing future world in which the destabilised climate sends civilisation reeling and, perhaps, brings about its final downfall. The Autumn People are few and far between; they live in a vast depopulated world of ruins dubbed the “catacomb of silence” (5), trying to understand the Greenhouse Culture who lived in this urban area centuries earlier and who indirectly are responsible for the approaching climate calamity. The historians survey the colossal submerged structures of tower blocks each inhabited by “70,000 ghosts” (12). Only the uppermost storeys rear above the water, which is more than thirty metres deep, and the narrow, shattered balconies are all the archaeologists can see. In this uncanny submerged cityscape, the signs of approaching climate change seem even more ominous. Although what they see “may be a limited, minor weather cycle” (13), they are aware that an ice age could come very quickly. Meteorologists predict a succession of very sudden, very cold snaps “each lasting a decade or so—before the interglacial ends and the ice closes in” (13). The process started in the greenhouse years, which melted the poles and the glaciers, but that is going to be reversed and the “bones of the planet” (14) will be frozen.

Studying the reckless and suicidal Greenhouse Culture, which brought about its own end and refused to acknowledge that their political decisions prompted the climate catastrophe, is an uncanny experience. The Autumn People strive to imagine the greenhouse years; the havoc, the conflicts, the vain attempts to stop the flooding. The ghost town may well be a premonition of their own future, and the helplessness of the ancestors makes them ponder their own inescapable fate: though more intellectually developed, fewer and wiser, they are equally vulnerable. In the embedded story of the Conway family, who are reduced to inferior Swill status, the mid-twenty-first-century climate catastrophe is described in detail: “the extra CO₂” (21) kills some plants and causes farming disasters; summers grow humid and tropically wet. The characters dream in vain about mornings with near-zero temperatures and winds of winter “heralding the old world’s return” (22). Yet the climate is getting hotter and hotter; the icecaps melt; the crop yields are poor; and climate refugees destabilise the social order. Once the global warming has commenced, it cannot be stopped and has to run its centuries-long cycle. Looking back from the perspective of the early 2060s, one of the protagonists realises that the beginnings of the end are to be found in the last years of the Cold War: the nuclear threat and the climate catastrophe are historically connected. The authorities failed to do anything as they “had the nuclear threat and the world population pressure

and the world starvation problem ... and the endless business of staying in power ... and the emerging troubles of the next decade had to be left until there was time” (22). The history of the post-World War II world is presented as a chain of crises and troubles which breed yet more troubles, and the situation steadily deteriorates. Sea levels are rising, pollution during the “storm years” makes the seawater filthy, and the beaches the characters used to paddle along become dirty and horrid. The Antarctic ice cap is melting, which results in yet more climate change: Australia’s coast is growing humid and steamy; there are massive rainfalls and the rivers flood, covering the landscape with waste. The Conway children, brought up in the Sweet enclave, are moved to the poor district where “the Swill would one day swim like mad” (62), as it is often flooded. Receding waters leave behind stinking mud, and the media show reports from the most stricken areas: “stranded cattle and people on rooftops with water up to the spouting” (62). The Conway family numbly watch the media coverage of weather disasters, knowing that they cannot help similar calamities happening to them. Turner anticipates the twenty-first-century sensation of experiencing trauma in one’s living room via the screen: “[i]n an age of increasing media coverage, the media has become a catalyst for both increased incidents of vicarious grieving and vicarious traumatization,” notes Sullender in “Vicarious Grieving and the Media” in 2009.

Slum neighbourhoods suffer from flash floods, which occur suddenly and recede overnight, making poor people move to gigantic tower blocks inhabited by thousands of the Swill. Every block has a self-proclaimed boss who rules this overcrowded vertical city and takes care of his charges who live in a tribe-like society. Australia suffers: weather disasters destroy crops and housing, social life deteriorates, urban areas turn into steaming ghettos. And yet other continents cope with much more dire crises: Asia is so overpopulated and helpless because of its rocketing birth rate that it forces Australia “to give away a third of Australia’s empty hectares to those ante-hordes of Asians squeezed from their paddy-fields by swarming fecundity” (33). The result is a massive ecological catastrophe: in order to turn Australia’s arid centre into arable land, a torrential rainfall programme is launched and the clumsy weather control techniques employed “disrupt planetary weather until international outcry force[s] moderation,” and to make things worse, a biospheric disaster follows when “megatonnes of soil conditioner and fertiliser” (33) are poured into the ground, polluting coastal rivers, the water table, and all the artesian reservoirs. Turner discusses the economic consequences of this disaster, the collapse of money systems, the pursuit of wealth, and the mounting starvation. He sketches a worldwide panorama of the early twenty-first century: the West and the Developing World are struggling to save their collapsing economies, more and more people in the West become pariahs, the Swill/Sweet dichotomy

emerges, and finally there is no geographical difference between the rich and the poor: in every country, only the most privileged can afford to live above the tideline in still comfortable enclaves. It is they who force governments to erect very strong, very tall tower blocks and herd the poor there, and “the Computer Culture” of the turn of the millennium gives way to the Greenhouse Culture. In order to maintain some social order, the gangster-like Tower Bosses become local authorities, and nation states are transformed into a network of small states within states. Thus, a certain degree of social organisation is preserved though, with every flood and every hurricane, the spectre of total anarchy approaches.

“How much should science fiction aspire to prophecy? How much ... should SF writers be held to standards of ‘realism?’” (xi), asks Graham Sleight in the introduction to the 2012 edition of the novel, which in hindsight a quarter of a century later reads like a didactic cautionary treatise. Turner is acutely interested in the environmental issues, how they are going to shape social organisation in the future, and how they might influence the lives of individuals within society, which makes his novel extrapolative—he identifies ecological hazards which already, back in the 1980s, struck him as potentially dangerous, and he thus projects them years ahead. Aware of the “neurosis” of contemporary civilisation, hooked on self-destruction, he also postulates some subliminal connection between the end of the Cold War and the subsequent environmental catastrophe: “Nuclear weaponry became a technique of postponement, as good a solution as any in a basically neurotic culture ... The world got on with the business of starvation and selfishness” (114). Such a diagnosis of the turn-of-the-twenty-first-century balance of power is delivered by one of the Autumn People from the perspective of the distant future: in retrospect, this civilisation is driven by two opposite drives whose clash causes the neurosis. The unstoppable instinct to reproduce and a destructive propensity for aggression result in, on the one hand, an arms race and, on the other, unchecked population growth. Nuclear war is kept at bay, and the nuclear threat is the focus of the neurotic attention of humanity. Simultaneously, the inherent selfishness of people makes them pillage nature and breed in unrestricted fashion. Attempts to reduce the earth’s population are repeatedly introduced, and, in the meantime, climatic changes alter the face of the earth, and once-affluent regions suffer weather disasters. Australia’s Victoria is badly affected as the Antarctic ice shelf melts. Flash floods cover Melbourne in stinking mud; rivers change into “filthy, garbage-brown” floods which carry bottles, dead animals, and “clutches of nameless flotsam” (161). The life of the Conway children is a chain of endless calamities as the ocean rises year after year, and they are made to realise that the real catastrophe is yet to come. Growing up in the slum teaches them survival, and they begin to understand that no one has ever really tried to avert the oncoming

disaster; the short-term measures introduced by governments are just “the cowardly whisper of humanity in all ages, ‘Please, not in my time’” (180).

This last plea—that the long-awaited disaster be postponed till after our times—is what humanity always makes, with people understanding how self-destructive our civilisation is, yet hoping that it will last in their lifetimes. Introducing the changes necessary to achieve some utopian planetwide sustainability is politically impossible, and the characters in *The Sea and Summer* can see it. Both in the twenty-first century and in the distant future, they have to face the truth: humanity is approaching a bottleneck caused by radical climate change which is going to destroy civilisation and which may also lead to the end of humankind. “The sea will rise, the cities will grind to a halt and the people will desert them,” exclaims one twenty-first-century inhabitant of Melbourne, who cannot even imagine life after the disaster: “What then? A hunter-gatherer period while the ecology licks its wounds?” (349). The tower block bosses, protective of their people, start preparing “a legacy for the dark years,” teaching their charges “[s]tuff like farming, cloth-making, hygiene” (356). We may guess that such an attitude will allow for perpetuating the human race through the greenhouse years, and in the distant future, the Autumn People will have their chance at survival. Yet the story of climate disaster threatening humanity repeats itself, and the new ice age is going to pose an even greater danger and perhaps lead to the demise of any civilisation. One of the Autumn People refuses to acknowledge this possibility, considering his people: “only the beginning of humanity, the larval stage, the species preparing for its discovery of what intelligence is for. We will survive and develop, each crest a little higher than the one before” (342). He is interested in archaeological excavations and history; thus, he is aware that the same scenario of a planetary regression is recurrent. The comforting thought that each subsequent civilisation is a tiny bit morally superior to the previous one allows him to believe in progress, but it is by no means certain. The Autumn People, having studied disasters of old and facing a dire new one, want to believe that by learning to endure the rainstorms and frosts pestering the planet periodically, humanity can survive. Yet it always will be subject to the uncontrollable ways of the planet.

Therefore, *The Sea and Summer*—a novel written in a transition period when fears of a nuclear war were fading, but the prospect of a climate catastrophe entered collective imagination—sketches a rather depressing picture of the human race. People are always confined by their political, economic, and social situation and have to sacrifice long-term goals in order to survive. Climate catastrophes—often prompted by human recklessness—do occur and may lead to the end of humanity. It is only from the subjective perspective of well-meaning characters that we may risk an optimistic prognosis for the very distant future, while the next few centuries are going

to be disastrous. In *The Sea and Summer*, one can find motifs characteristic of Doomsday Clock Narratives: both of its storylines are set before a global catastrophe; the coming weather calamity is unavoidable—it is the nature of our planet that the climate may rapidly change, and human greed makes things even worse. The novel juxtaposes the stories of particular characters with the perspective of deep time: the long centuries of regression, when the remains of material culture are turned into uncanny ruins. Yet, Turner does not exclude the possibility that one day people will learn to coexist with the planet, will learn the ways of nature, and outgrow their limitations. It is this hope rather than anxiety that *The Sea and Summer* stresses, although the characters do experience pretraumatic stress.

The three novels discussed in this chapter were published in the quarter of a century after the Cuban Missile Crisis and before the fall of the Iron Curtain and the dramatic changes of 1989, which significantly reduced the possibilities of a global nuclear war, although these years were far from peaceful. The media coverage of the Three Mile Island accident, the deployment of American Pershing missiles in Europe, the Chernobyl disaster, and the Soviet invasion of Afghanistan made people acutely aware that they were living in the shadow of the nuclear threat. Simultaneously, environmental awareness was growing, and the term “global warming,” which was coined in the 1950s, invaded public discourse installing a fear of climate disaster in popular culture. The novels by Christopher, Ballard, and Turner reflect these ambiguities—read against the pattern of the Doomsday Clock Narratives devoted to a nuclear disaster, they strike one as being much concerned with—to borrow Ballard’s term—the inner space of the protagonists’ minds. Climate-changed landscapes as depicted in these books serve to externalise human thoughts and emotions. Following the Freudian pattern of the return of the repressed, *World in Winter* shows postimperial fear and the remorse of people who are forced to realise that they no longer have any power over global issues. *The Drought* blurs projections of traumatic memories of the war with pretraumatic flash-forwards of the future calamities the protagonist imagines—arriving at the conclusion that humanity is driven by the death instinct and will soon willingly perish. *The Sea and Summer* depicts the water-logged ruins of our world as seen by members of a future civilisation which is also doomed to perish in a climate disaster, and the prevailing feeling is resignation and sadness. In all three books, human lifetimes are contrasted with deep time; climate change makes the world uncanny; geology and archaeology serve as vehicles for metaphors; and disasters are recurrent. Yet, the impact on the protagonists’ subjective perception of reality renders the looming catastrophe less palpable: it is difficult to say whether the physical world will objectively “end.” Yet, what the reader notices is a prevailing feeling of liminality provoked by climate change. Interestingly, it is the beach, the shoreline, and the (drained

or frozen) river mouth that Christopher, Ballard, and Turner are very keen on describing. The most traumatic scenes in *The World in Winter* happen on the African beach and on the British shore; Ransom in *The Drought* inhabits the lakeshore, follows the drained river, and spends a couple of years living on a seashore; *The Sea and Summer* is set in a drowning (and then drowned) Melbourne. The liminal space where the water meets the land causes—in these narratives—nostalgia, apprehension, and a feeling of eeriness which is only too suited to disaster fictions concerned with the thresholds between past, present, and future as well as the external and inner worlds.

In my Introduction I defined Doomsday Clock Narratives by enumerating their features: these narratives are set after a catastrophe, they describe the protagonists who feel sure that the world will soon end, they depict people waiting for an even worse catastrophe to come; they highlight geology in descriptions where the emphasis falls on waste and industrial bric-a-brac as seen by future post-human archaeologists, all of which result in the uncanny feeling that the countdown has already started, and finally the protagonists must cope with both traumatic memories and pretraumatic stress. In Christopher’s *The World in Winter*, one can find some (yet not all) of these elements, while Ballard’s book is much closer to this pattern. And yet, both books are absolutely worth analysing from such an angle, as both show disaster-altered landscapes as projections of the guilt and remorse felt in the Western world in the wake of World War II and during the arms race. They enter into an intertextual dialogue with the tradition of Doomsday Clock Narratives—such as the books by Shute and Miller described in Chapter 4—to depict disasters (whether anthropogenic or not) as something people subliminally are waiting for. The juxtaposition of the passages from *The Drought* and *Empire of the Sun* shows that the PTSD of the focalisers and their pre-TSS are of a kind and make them project fears onto disaster-stricken landscapes. Finally, George Turner’s *The Sea and Summer* combines a similar narrative strategy (of rendering landscapes uncanny by projecting repressed anxieties) with genuine worries about climate change. Written in the early days of the global warming debate, the book displays an intellectual affinity with the genre of disaster fiction and paves the way for various cli-fi Doomsday Clock Narratives written in the following decade.

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6 “I Wonder How Much Longer We Have”

Recent Climate Fiction from the Pens
of Maggie Gee, Paolo Bacigalupi,
Ruth Ozeki, and Yoko Tawada

The novels and climate-related disasters discussed in Chapter 5—the new ice ages and the drought—cause the characters’ long-forgotten memories to surface. They perceive the ice pack-covered planes and the dried-up riverbeds and fields as uncannily resonant of traumas from the past: wars, colonialism, and social injustice. Their authors, who are born in the first part of the twentieth century and remember the Cold War with its nuclear threats, depict climate catastrophes in reference to the return of the repression mechanism: half-forgotten historical catastrophes are reflected in present calamities. Yet, the novels by Ballard and Christopher were written before climate change became a globally discussed issue (although environmental worries were already a part of public discourse), whereas the novel by Turner derives from the early years of the debate. The books by the next generation of writers—Maggie Gee, Paolo Bacigalupi, Ruth Ozeki, and Yoko Tawada—were published during the last three decades of the post-1989 period. The enthusiasm about what appeared to be the final victory of liberal democracy very soon turned into worry about the future of humanity.

In the early 1990s, theorist of civilisation Francis Fukuyama wrote *The End of History and the Last Man* (1992), in which he proclaims that civilisation has entered a new happy epoch with the collapse of the communist bloc and the post-World War II balance of power. Yet, just ten years later, after the World Trade Centre terrorist attacks and the first climate-related natural disasters, political and environmental crises heralded an end to this new, enlightened epoch. In 2002, seeing the errors in his prophecies, Fukuyama published *Our Posthuman Future*, a book that describes a future that already surrounds us with all its moral and sociological dangers. Fukuyama abandons geopolitical discussions and concentrates on the impact of the biotech revolution on human life, claiming that this is going to be the major factor influencing Western civilisation. In the next twenty years, calamitous events such as Hurricane Katrina of 2005, the

Japan earthquake and tsunami of 2011, the 2013–2016 Ebola epidemic, and the outbreak of the Covid pandemic in 2019 reopened discussions concerning the end of humanity. In the twenty-first century, Doomsday Clock Narratives are an increasingly important current in speculative fiction offering imaginative ways of dealing with the growing feeling of eco-anxiety and subliminal dread, both of which Western civilisation faces. In fact, very many early twenty-first-century classics of speculative fiction, such as Cormac McCarthy’s *The Road* and Margaret Atwood’s *MaddAddam* trilogy, can be read as expressions of pre-TSS and are worth analysing in this chapter. Choosing these recently written Doomsday Clock Narratives was difficult, and I decided to discuss some less often analysed climate fictions concerned with environmental issues and the question of “how much longer we have” (Ozeki 188).

Maggie Gee’s *The Ice People*

The prolific British novelist Maggie Gee, whose trademark is writing about civilisation-related hazards, published her first novels in the 1980s, and since then, she has written numerous fictions devoted to humanity’s reaction to disasters. Her fiction reflects the anxieties of the turn of the twenty-first century: from the last days of the Cold War, when the nuclear threat was still felt in Britain, to the period when climate change becomes widely discussed. In her early novel, *The Burning Book*, Gee presents the story of one British family throughout the twentieth century: subsequent generations live their lives in a society struggling with “burning” problems: poverty, political violence, lack of communication. Written in 1983, the novel depicts a country in distress: for Gee, Britain is still traumatised by the far-reaching effects of World War II. As Gee said in an interview, in her opinion all human activities in the second half of the twentieth century are somehow affected by World War II, “to which we are still so close in time” and “which caused one of the great losses of life in 150,000 years of human history” (Kiliç 14).

Mine Özyurt Kiliç calls this book a condition-of-England novel which, by describing a small group of people—their careers, marriages, and everyday problems—against the panorama of contemporary British society, depicts how late twentieth-century British families re-enact the traumas caused by Nagasaki and Hiroshima. The traditional Dickensian-like narrative of family life is periodically interrupted by a parallel, experimental narrative composed of voices from Hiroshima and, when the chronological main storyline enters the 1980s, by headlines about an imagined Soviet Union–US political crisis ending in a nuclear war: finally, all of the family stories end violently, and the reader is led to imagine that the novel they are

reading has burst into flames, becomes the burning book of the title. The intrusive subsidiary storyline offers a reversed alternative chronology in which events are measured according to their distance from their inevitable destruction in what the novel repeatedly calls "the final violence" (Connor 241), thus making *The Burning Book* a prime example of a Doomsday Clock Narrative. This narrative countdown gives the final violence an inevitable character: we wait for it to happen, it has to happen, the whole twentieth century is just a preparation for it.

In *The Ice People*, a novel written at the end of the following decade and set at the end of the twenty-first century, Gee basically repeats a similar narrative structure: a family's story is told in retrospect by a protagonist named Saul, and it spans most of the century but is interrupted by the frame narrative which is the countdown to certain events leading to his death. Thus, the main storyline, by depicting the history of one courtship, a marriage, and a separation described against the backdrop of a constantly deteriorating ecological and social reality, is a chronicle of an approaching disaster. Replacing nuclear Armageddon with climate catastrophe, Gee produces an equally disturbing story. In *The Ice People*, a secondary storyline set in the very twilight of Western civilisation shows how Saul, the storyteller and one of the last people to remember the old times, tries to keep death at bay, Scheherazade-like, by telling stories to neoprimitive outlaws who are getting more and more tired of him. The end of his story converges with the end of his life, as both are finished off by a new ice age. By this time, law and order have already broken down; an ice shelf covers the British Isles; men and women live separately in tribal groups; and memories of the past are lost. These environmental changes start in the days of Saul's youth when the issue of global warming becomes dire, and radical sentiments are felt. The initial increase in mean temperatures is followed by the unexpected onset of an ice age (which, like in Turner's novel discussed in Chapter 5, is cyclical) and a deterioration in social life: climate migrations lead to outbursts of racism; difficulties in conception and a scarcity of children result in a crisis of marriage and family life.

The radicalisation of political life starts as early as the first decades of the twenty-first century. Saul remembers how, in his childhood, the first climatic changes are felt in Britain: how, aged 12, he feels confused as, simultaneously, the media are reporting constantly rising sea levels and the collapse of Dover's white cliffs, but there is not enough tap water for people's gardens. Moreover, Britain has to deal with "dark people, sweating and furious, bullying the immigration officers, shouting and swearing, their black mouths open" (18). The vicarious trauma instigated by the media coverage of political violence juxtaposed with pictures of eroded white cliffs is among Saul's earliest memories. And yet, in comparison with what happens later, when the short period of global warming reaches its

acme, those days are not that bad despite three years of a haemorrhagic sleeping sickness plague and an economic crisis. In the following years the overheated planet starts cooling down; governments and big business try to claim the credit, boasting about their responsible policies, yet the truth is that no one understands what kinds of processes are at work. In this dystopian, depopulated Britain, people do not respect politicians and scientists any more: even if climate change is independent of human activities, people themselves are responsible for the deterioration in social and public life, and the authorities fail in the face of these crises.

When the first reports of the miraculously thickening Arctic ice appear in scientific journals, the media react with sensational headlines announcing that global warming is "a blip"; information campaigns and anti-campaigns then follow, adding to the general confusion. Some scientists deny that the polar caps are rebuilding, while others keep trying to prove them wrong, and everybody follows their own political and economic agendas. Then, a curious spell of cold occurs in the middle of summer, "a little freak, of course, a byblow of the general miraculous cooling that had come to save us from global heat death" (141). Soon, measurements of petrified pollen are taken all over Europe, and the beginnings of the last Ice Age are carefully researched, leading scientists to believe that the transition from temperate weather to permafrost took only twenty years. The government promises to prevent the global catastrophe by increasing the amount of sunlight (thanks to gigantic mirrors or by seeding the icecaps with black material so that they absorb heat instead of reflecting light), but they fail miserably. In the following decades, the ice covers Britain, and groups of outlaws roam the countryside burning all combustibles they can find. Wild, illiterate children are the only survivors; they occasionally tolerate single old people who, like Saul, tell stories and know how to operate machines, but they soon get bored with them.

In Saul's retrospective story, he tries to explain sociological changes accompanying the climate disaster and explain why human civilisation fails its test and, faced with radical environmental changes, regresses rapidly. In the overheated times of his youth, when civil order first broke down for a couple of years and "the streets grew rougher" (24), he learns to mind his own business and watch the world around him from a safe distance. With practically no governments and raging plagues, Europe reverted to anarchy, and some parts of the continent, for example France, never recovers politically. People's reactions to environmental disasters and spreading infertility were often radical: in Portugal, separatist groups decided to move into caves and live the "natural" way stone age people did, which apparently soon resulted in multiple births, and, according to media coverage of this commune, there "were children everywhere" (25).

In the following years, when the earth is cooling down and political order is re-established in Britain, at least temporarily, environmentalist movements, a return-to-nature ideology, and a women's organisation called Wicca World merge and proclaim a "caring revolution." Drawing on the pre-Christian beliefs of northern Europe, witchcraft, and the cult of the great Mother, Wicca World becomes a political powerhouse and stands in elections, which, in the long run, results in political division between women and men. Saul bitterly remembers their campaign films showing "radiant, kindly, softfocus women ... dancing in a caring ring, in green fields around a herd of blonde children" (137). Nostalgic footage of girls and women digging with spades, drinking from springs, and running in lush grass makes the film epitomise the green utopia radical environmentalists dreamt of in the late twentieth century. Yet, despite the abundance of children, there are no men in the films, which leads Saul to guess ironically that they have just "buried their husbands" with these spades. Unable to deal with the failure of his own marriage and loss of his son to Wicca World, Saul remembers this organisation not as an attempt to restore order in a world suffering numerous calamities but as a hysterical attempt to feminise Britain, which is symbolically represented by the women giving his son female hormones. Yet, Wicca World fails to reshape Britain: perhaps because of its ideological flaws, perhaps because of the very rapid deterioration of the climate. Lakes on the mainland begin to freeze over, rivers stop flowing, food crops fail, it gets colder and colder "at a rate of one or two degrees a year" (161). Terrorist attacks decimate the climate refugees: long before the migration, Euro-sceptics blew up Eurotunnel, burying thousands of people under the seafloor, and amidst mass migrations, attacks become more fierce. An explosion at Boulogne-Bilancourt results in half of Paris burning down and in grounding hydrocars so that people have to travel on foot or convert their vehicles to run on alcohol. Most of the refugees do not survive their journey south, and a few survivors live the rest of their days just like Saul—alone in a depopulated, frosty Europe. *The Ice People* is a chronicle of humanity's failure to preserve civilisation despite having access to modern science and advanced technology. The gradual deterioration of the environment pushes some groups of people to embrace radicalism: reverting to a stone age or forming eco-terrorist organisations whose attacks result in numerous deaths and irreparable destruction. Ethnic and sexual groups are formed and define themselves against the rest of society, disrupting family lives and hurting everybody, especially the precious few children. The main storyline of Saul's life is set during the crucial decades of the mid- and late twenty-second centuries in Britain when this failure becomes apparent. Thanks to the frame narrative depicting the last days of his life in the group of barbaric outlaws, the reader knows from the very beginning of the book what

fate awaits him in the future: his biography has the reversed chronology of counting down his remaining months and years till the moment when he is the old man who is actually telling this story.

Gee has very carefully chosen the quotes in the foreword preceding *The Ice People*: derived from the science columns of newspapers and scientific research papers, they describe at the same time the situation within the novel and the Western world at the turn of the twenty-first century. There is an excerpt from Mary and John Gribbin’s *Watching the Weather*, a claim that throughout the history of the human species there are recurrent ice ages each about 100,000 years long separated by interglacials of about 15,000 years. The Gribbins add that we all live today in an interglacial which began 15,000 years ago and that the reasons for the recurrence of ice ages are not fully understood. Anthony J. Stuart’s *Life in the Ice Age* gives a slightly different timing, but the idea is very similar: periodically, earth enters ice ages and now “it seems likely that colder conditions will return” (8). The following two quotes from Windsor Chorlton and Andrew Sherratt discuss the interglacial Holocene point to the fact that, in comparison to four previous interglacials, it has already lasted for a long time and most probably will soon end. Sherratt adds that, often before the return of an ice age, there is a “false dawn” (9) of global warming, after which the world plunges into cold and aridity. The suggested conclusion is that our own global warming may well be a modern equivalent of just such a false dawn, which is the main assumption behind the near-future events described in *The Ice People*. The next quote (an excerpt from a science report published in *The Times* in 1997) serves to persuade the reader that the real “Europe should prepare for temperatures to fall to Arctic levels, even though meteorologists have declared 1997 the earth’s hottest year on record” (9). Gee is emphatic that her novel, which is published as dystopian science fiction, nevertheless offers a plausible speculation as to what the twenty-second century might be like: the last quote, taken from Adrian Berry’s famous book *The Next Five Hundred Years*, is about the botanist’s research into petrified pollen. The very same research is referred to in Saul’s narrative when he remembers early twenty-second-century media coverage of climate change, which additionally blurs the division between fact and fiction.

The Ice People reflects the anxieties of the period it was written in, when a series of the earth’s hottest years on record made people realise that global warming was a fact. Just a decade after the Cold War and Fukuyama’s “end of history,” a new threat to earth’s future entered the public discourse—catastrophic climate change might lead to the demise of our civilisation. Gee makes Saul cite James Lovelock’s Nobel Prize acceptance speech (which in the alternate world of her fiction he received for his “real” Gaia hypothesis) and also regret that twentieth-century

climatologists "weren't listened to much, except when hacks harassed them for short term predictions" (60). Without committing herself to claiming that climate change is or is not anthropogenic, she underlines that interglacial weather conditions allow for human civilisation to flourish but harm other species. Saul claims that "Lovelock said it decades ago. There were more species in ice ages, not fewer" (273).

Alluding to Lovelock's Gaia theory, Saul realises that the regression of civilisation is going to be beneficial for the planet, and thus the end of humanity might well be a part of some natural long-term process. Lovelock's thesis (that the personified, Goddess-like earth is capable of taking care of flora and fauna and maintaining optimal climatic and atmospheric conditions on her surface) is reflected in the ideology of the Wicca World organisation, which appeals to the emotions and subliminal needs of people. Rational Saul is a political opponent of Wicca World but, towards the end of his life, feels attracted to Lovelock's logic. Although in reality Lovelock never delivered a Nobel acceptance speech, he did receive a number of honours for his Gaia theory despite its non-scientific character. The speech he delivered for the Geological Society when he was awarded the Wollaston Medal points to the same issues Saul ponders upon in his old age: humanity's stance against the uncertain future of the planet and the need to rethink the scientific paradigms we use to deal with problems. Lovelock refers to Gaia theory as being a useful tool for predicting rather than a factual description of natural processes, but argues for introducing new approaches to scientific discourse. Gee's novel can be read as a similar metaphorical attempt to imagine how, in the next twenty decades, long-term geological and climatic processes may reshape the planet and reduce humanity to a small number of neoprimitive tribal groups. There is no indication in the novel that a personified "Wicca" or "Gaia" deity reacted to human folly by making the ice return to temperate zones. Rather, Gee depicts the twilight years of Western civilisation when humans fail to understand what is really happening in nature, not to mention making no attempts to secure a safe future for their species. The fatal division into masculine and feminine camps, terrorism, pollution, and irresponsible political decisions make the situation even worse.

The narrative scheme Gee devised for her nuclear disaster Doomsday Clock Narrative, *The Burning Book*, is repeated in *The Ice People*; only the nuclear war everybody talks about but nobody believes in or prevents is replaced by catastrophic climate change. A far more important difference is that, at the end of *The Burning Book*, the world is incinerated, while at the end of *The Ice People* we see that "[a] great wheel of birds comes ... thousands of them blown in from the sea. They are coming back slowly, the birds, the foxes, paws, clawmarks printing the ice" (318). This is the

Carson-like closing image of the book—in *Silent Spring*, the birds die in their thousands, but here they return. By blending dystopian and disaster elements with references to Lovelock, and by quoting and paraphrasing the environmental classics, Gee produces her own cli-fi Domsday Clock Narrative. The book is set between two catastrophes (early twenty-second-century, plague-ridden global warming and the return of an ice age), and the demise of human civilisation is part of a much greater natural cycle. Moreover, Gee introduces the perspective of deep time: the counting down of the remaining days of human civilisation (epitomised by Saul’s autobiographical reverse-chronology storytelling at the end of which we learn that he started to tell the tale on the last day of his life) is interrupted by references to geology—rediscoveries of late twentieth-century theories concerning glaciers and ice ages foreshadow the final catastrophe Saul witnesses as an old man. The post-human perspective of revived nature, which after humanity’s demise will reconquer the planet, gives the novel an uncanny atmosphere bringing to mind the return of the repressed: the Gaia we ignore is going to come back one day.

Paolo Bacigalupi’s *The Windup Girl*

Set in a humid and overheated twenty-third-century Bangkok, Paolo Bacigalupi’s *The Windup Girl* describes a landscape of levees and dikes, bamboo rafts, and the constant threat of flooding. Climate change has transformed the world: the polar ice caps have melted, the world population is starving, aggressive calorie companies have political power, and secret seedbanks hoard priceless samples of DNA from before the genetic modification of fruit and vegetables. Gas-fuelled vehicles and powerful computers are used exclusively by the very rich, electricity is provided by primitive dynamos, and every couple of years deadly pandemics decimate humanity. Protected by high walls which keep the city from immediately flooding, Bangkok is inhabited by greedy and ruthless people and by various genetically engineered creatures: chameleon-like “Cheshire” cats and the test tube-grown humanoid “windups,” that is, biological machines. Some of them are military windups bred to fight, some are genetically modified to brainlessly work the fields, but some are smart and sexy Japanese luxury models. The titular windup girl, Emiko, is one such Japanese secretary-cum-interpreter-cum-prostitute and is immune to diseases. Her perfect skin is exceptionally smooth as it lacks pores and, consequently, does not sweat. Stranded in Bangkok, the windup girl has to move slowly and carefully as she easily overheats and constantly needs cubes of ice to cool down her body. The numerous mentions of melting ice on hot skin and rising floods in oven-like streets turn Bangkok into yet another liminal zone where water and solid matter meet.

First published in 2009, Bacigalupi's novel depicts human history over the coming centuries as a chain of catastrophes probably leading to the final demise of the race and, perhaps, to the beginning of a post-human civilisation of genetically modified offspring species. The grim realities of climate change and the subsequent biological disasters result in the constant degeneration of people as well as the dilapidation of urban space. Bacigalupi's cityscapes are postapocalyptic; the setting bears the marks of traumatic events from the past which must be deduced from the appearance of the city. "The idea of catastrophe as trauma provides a method of interpretation and posits that the effects of an event may be dispersed and manifested in many forms and not obviously associated with the event" (26), writes Berger in *After the End*. The novel's protagonists are shaped by such traumatic events from their recent history; their agendas, fears, and motivations are products of the violent events of the preceding decades. The main character, Lake Anderson, apparently an American businessman in Thailand who is trying to run a factory there, is in fact an agri-corporation envoy sent to infiltrate Thailand's secret seed bank. Andrew Hageman, in "The Challenge of Imagining Ecological Futures: Paolo Bacigalupi's *The Windup Girl*," explains how twenty-second-century wars ruined the environment "by [releasing] disease strains that mutate as rapidly as they devastate crops and the humans who come into contact with them" (283).

Anderson's mission is to undo the genetic destruction, and yet, as he represents the very same power—multinational, US-based capitalist corporations—that caused the harm in the first place, it is rather probable that in the future they will bring about an even greater calamity. Anderson's employee, Hock Seng, is clearly a PTSD sufferer haunted by intrusive memories of his slaughtered family. Just a few years before the events of the novel, the "Incident" wiped out 99 percent of Malayan Chinese, leaving a handful of survivors to flee Muslim purges, "fearing bloody slaughter every time a door opens" (Bacigalupi 17), and join the Bangkok poor. Hock Seng used to be a very rich man and head of a successful clan, but he lost his whole family in the "Incident," and everything he does in Bangkok is either a desperate attempt to get rich again or an instinctive reaction triggered by intense memories of his trauma. The most enigmatic of the characters, Gibbons, is a renegade corporate scientist and a genius who helps the Thais fight the plagues he had previously engineered himself. Gibbons refuses to admit to feeling guilty about having destroyed the "purity" of the biological realm; he does not believe in the concept of "nature" as opposed to human agency. For him biological evolution produced the human species, and everything they do to reshape the ecosystems is also "nature," just like in the case of ants or beavers, which leaves the question of free will open. "Nature ... We are nature. Our every tinkering is nature, our every

biological striving. We are what we are, and the world is ours” (243), Gibbons explains.

It is Gibbons who at the end of the book promises the windup girl the gift of reproduction, suggesting the continuity of human/post-human life on earth—which seems a logical consequence of history rather than an attempt to create a future utopia. Gibbons cuts a strange god-figure; his “willingness to unleash his potential” will probably perpetuate the traumas rather than grant a new Eden to the descendants of men. Two other protagonists, Jaidee and Kenya, despite their noble intentions and genuine nostalgia for the lost biodiversity, wreak even greater havoc. Buddhist Kenya works for the environment ministry and fights with the representatives of the trade ministry, who for her stand for the capitalism that is responsible for the eco-disaster. Her environmentalist/Buddhist/Grahamite ideology is a hybrid set of beliefs created in the years of this eco-catastrophe, combining the preservation of nature with the teachings of Buddha and a belief in a Noah’s-Ark ethos of securing biodiversity and keeping it contained for some better future. Thus, motivated by this ideology, Kenya destroys the city’s drainage system in a senseless act of violence: she dreams about some post-Flood utopia, re-establishing “nature.” “With frequent reference to Eden and the Biblical flood, the Grahamites’ desire to reclaim the natural becomes tantamount to a desire for time travel or global annihilation, since these are the only solutions for returning the world to a state of natural purity” (504), claims Scott Selisker in “‘Stutter-Stop Flash-Bulb Strange’: GMOs and the Aesthetics of Scale in Paolo Bacigalupi’s *The Windup Girl*.” Selisker notes that by making Emiko the central figure in the novel, Bacigalupi subverts the notion of “natural purity” and the Noah-like ethical purification of the world. Andrew Hageman makes a similar point when comparing the final flood in *The Windup Girl* to the Biblical Flood. In the Bible the survivors of the Flood were “deemed by God to be worthy to repopulate the Earth,” while in *The Windup Girl*, the survivors are “a heterogeneous group that disrupt any conventional sense of human ‘purity’” (Hageman 19), as they are a genetically engineered hybrid, a renegade genetic engineer, and a transgender person. Bacigalupi’s climate fiction is therefore not about the end of an essentially evil human civilisation which hopefully is going to spawn a better world of morally good post-human species. The book offers a much grimmer picture of historical traumas resulting in a never-ending cycle of violent transformations of the planet. The series of disasters which traumatised humanity in the late twenty-first and twenty-second centuries (and which for the characters is actually hazily remembered history) is still ahead of us, and, moreover, in the fictive world, they may well repeat themselves in the future of the characters. The novel’s protagonists simultaneously dream about the return of twentieth-century prosperity, which they hope is waiting in the wings,

and dread various calamities: the posttraumatic stress this society suffers makes it even more susceptible to pre-TSS. The ministry of trade and the ministry of environment wage bloody wars in the city streets where people live in fear of biological weapons—genetically modified diseases such as “blister rust” and “cibiscosis,” which destroy foodstuffs and poison people who ingest them. The novel is set after the terrible “Contraction” years are over, when a gigantic oil crisis plunged the world into mayhem: starvation, diseases, and geographical isolation. “Our” times of Western civilisation, from before the Contraction, are referred to as the “Expansion”—the utopian days of abundant food, cars, and computers. Everyone dreams of a new “Expansion”: geographical rediscoveries of faraway lands, trade, and investments. The only American character in the novel cherishes the very thought of expanding, rebuilding the old prosperity. He is proud of having travelled to Asia—in his grandparents’ time, “even the commute between an old Expansion suburb and a city centre was impossible” (165), and his generation is lucky again. Yet for the Asian protagonists, the Expansion–Contraction–Expansion cycle is never-ending and thus “nothing is certain, nothing is secure ... the Buddhists understand this much” (96), and after every period of relief, new calamities emerge.

Memories of the previous world’s destruction haunt the characters: the collapse of ecosystems destroyed Southern Asia, the borders were closed, people tried to isolate themselves, and special troops burned thousands of acres of forest. The calorie companies tried to produce plague-resistant seeds, and “the walls had gone up” (173) against not just the plague but also the civil war, the starving refugees. Rising sea levels were kept under control using a system of dikes and levees, but pollution and an accumulation of toxins in the seawater resulted in viral mutations which jumped easily from saltwater to dry land. Traumatic memories of this period make the characters anxious about the future: fear of a new outbreak of the plague and subsequent wars is mixed with an overwhelming feeling of nostalgia. Looking at paintings of the now-extinct bo tree, one of the characters is curious whether the artist “was lucky enough to live when they lived, or if he modelled it from a photo. Copied from a copy” (241). There is nothing like a “real thing” or “nature” anymore; the surviving organisms are genetically engineered reconstructions of past trees and fruit; they are “copied from copies.” Mourning figs and bananas, mussels, fish, and chickens, the characters feel guilty that they “were not fast enough or smart enough to save them all” (241). In the streets of Bangkok, preachers tell stories of Noah Bodhisattva “who saves all the animals and trees and flowers on his great bamboo raft and helped them across the waters” (241), and by addressing the subliminal needs of the listeners, such cults flourish. It is not only wildlife and foodstuffs that we know today that are painful memories of loss in the novel: so too is technology—petroleum-burning

cars and energy-consuming old computers evoke feelings of awe, nostalgia, and outrage. Looking at power-consuming fifty-year-old computers in a secluded centre, one of the characters could “almost see the ocean rising in response” (308).

Vainly hoping they are at the threshold of a new Expansion, the characters are painfully aware that the biological abundance of the old times has been lost forever. Even if they succeed in restabilising the communication network, allowing them to stay in contact and trade goods with Europe and America, no genetic engineering is going to undo the havoc of the turn of the twenty-second century. The climate change resulted in the calorie wars (during which genetically modified pests were used as weapons; the slaughter of wildlife, the destruction of ecosystems, and mass human deaths took place), contaminating humanity on the spiritual level too. Humanity’s environment, human bodies, and human souls are warped forever, and the new cult of Noah, who saved a handful of creatures on his ark (letting their DNA perpetuate itself), is but a feeble attempt to heal people’s spiritual wounds. The desperate belief in the hidden seedbank, where the genomes of edible plants are saved Noah-like, pushes calorie companies to wage yet another war, while the earth is, ironically, too polluted to yield good crops. The Buddhists know all this—heirs to much older wisdom, they mourn the lost nature—which is symbolically rendered in a scene when, passing a group of dead sacred trees, one character touches their lifeless trunks and feels boreholes and fine nets of grooves. Ivory beetles have destroyed all the fig trees in the world. And it was under just such a tree that the Buddha attained enlightenment. They know that the new beginning is doomed to failure even before it really starts: the political powers who control seedbanks know that it pays for them just to wait; as with “genehack weevils” and blister rust sweeping the globe, their stock of unmodified DNA is priceless, and if they wait long enough, the new Expansion is going to belong to them. Bacigalupi leaves his readers in no doubt: even after a long period of self-inflicted suffering, the unimaginable destruction and ruin of the human race will have taught them nothing, and the new Expansion is going to repeat all the crimes of the previous one, but twofold, as advances in bioengineering allow much greater harm to be done.

The human world in *The Windup Girl* is silently awaiting its demise, and the countdown has already started: each new iteration of a virus, each new spontaneous mutation in the wild, each chance meeting of germs may result in the outbreak of the final pandemic. Every few years, new variants of viruses emerge, but not all of them are equally lethal: people remember particularly “bad versions” of, say, fast-mutating cibiscosis, which decimated Asia some years earlier and dread the next dangerous mutation. Each benign or relatively benign mutation increases the

probability of a "bad iteration" (4) the following year. Every time they take a bite of an apparently healthy and ripe fruit bought at a marketplace, people risk "cough[ing] up the meat of their lungs no matter how many Environment Ministry stamps adorn their produce." With cibiscosis and Nippon genehack weevils and blister rust and scabies mould and various other germs jumping the barrier from the animal kingdom, every meal in Bangkok may result in an excruciating death.

Symbolically, the looming/delayed catastrophe—which has not yet happened but which is growing more and more probable—is embodied in Bangkok itself. The city should have drowned long ago and the inhabitants know it, but, thanks to good chance and an old but miraculously still functional drainage system, it has stayed above the water, at least until Kenya decides to destroy the pumps. Life in twenty-third-century Bangkok, and life on earth in general, is waiting for the inevitable disaster; everyone knows it will finally happen and no one knows when and why. What people are left with is probabilities, counting their chances of survival for a little while longer. Psychologically demanding, as such prolonged stress is, it slowly becomes part of city life, and bookmakers accept bets concerning oncoming diseases and calamities: "Will the monsoon even come this year? Will it save them or drown them? There are gamblers who bet on nothing else, changing the odds on the monsoon daily" (338). Modern technology is useless in times of radical climate change—computers cannot cope with meteorological chaos and humans have to take whatever is coming in their stride, while some of them try to cash in on the calamities. Bacigalupi depicts the final stages of capitalism, a grotesque sick Bangkok—a world which does not seem worth saving. Anxiety is what everybody feels: New York, Rangoon, Mumbai, and New Orleans are already destroyed, and Bangkok's inhabitants are always "aware of those high walls and the pressure of the water beyond" and think about their city as "a disaster waiting to happen" (10). This is an essentially pretraumatic stress state of mind; in Bangkok everyone has the prospect of lurking death on their mind. It is forbidden to use the word "pandemic," as uttering it can "bring demons down on us" (235). Seeing emerald green rice grasses outside the city, the characters imagine them "wilt[ing] red under some new variant of blister rust" (340).

Bacigalupi's *The Windup Girl* is a Doomsday Clock Narrative of the climate change era, when past traumas result in the characters' pre-TSS. Waiting for a future catastrophe and coping with intrusive memories of war, disease, and violence, Bacigalupi's protagonists count down the remaining days as with each of them the probability of disaster grows more likely. They are living in the last days but are deprived of the solace of religion—the cult of Noah and the cult of Buddha are not going to save humanity. The liminal space of Bangkok, which is neither land nor water, neither nature nor civilisation, embodies the finality of the oncoming

catastrophe. A massacre of species is going on, and it is growing more and more difficult to judge which calamities are the result of the snowball-like spontaneous degeneration of the biosphere commenced by humankind a couple of generations earlier, and which are recent attacks by their political enemies’ army of geneticists. The Bangkok security forces discover medical charts which record the DNA of an engineered virus: somebody has attempted to alter the DNA of blister rust so that it can jump the animal kingdom barrier, and this will most probably ensure the final death of all genetically unmodified creatures on the planet. “If you are right, we are all dead” (310), one of the officers comments. Whether such a final act of suicidal folly will be the end of life on earth or whether it will purge the planet of humans, leaving it in the more trustworthy post-human hands of uncanny windups who are manufactured to be immune to viruses, is at best an open question.

Ruth Ozeki’s *A Tale for the Time Being*

One of the two protagonists in Ozeki’s complex and disturbing novel, a novelist named Ruth, lives with her husband Oliver, an environmental artist and activist, in British Columbia on the Pacific coast. The very name of the nearest town, Whaletown, retains the memory of mass killings of these animals, and Ruth likes to imagine that the ones who escaped the slaughter warned others to avoid the island “chirping and cooing ... in their beautiful aquatic voices *Stay away!*” (58). Whaletown is situated on Desolation Sound, which Ruth describes as “a liminal space” (59) with a prophetic name “oracular and haunted” (59). The names “Ruth,” “Whaletown,” and “Desolation Sound” are carefully chosen as in *A Tale for the Time Being*, names are “often ... an omen” (59), and these suggest liminality. “Ruth,” the protagonist remarks, is derived from a Middle English word for “regret” and sounds like the Japanese word for “not at home.” This name refers to both the author and the protagonist, blurring the fact/fiction demarcation line. “Oracular and haunted” place names tell us about the traumatic past—memory of slaughter, and they prophesy a (traumatic) future. Desolation Sound is washed by the Pacific, and the ocean, with its tides, gyres, waves, storms, and tsunamis, stands for the malleability of frontiers, borders, and divisions: the ocean preserves the past and washes ashore whatever was dumped (from World War II kamikaze pilots’ aircraft, to plastic rubbish, to radioactive waste, to things taken by the waves from Japanese houses destroyed by tsunamis) and forgotten. Clearly, the Pacific isolates America from Asia, but, in the course of the novel, it seems to bridge British Columbia and Japan, and to link the lives of both protagonists, entangling them with the lives of their ancestors and pointing to the interconnectedness of all things. Life on the coast and

combing the beaches is, for Ruth, the epitome of inhabiting a liminal space; she is suspended between past and present, she rediscovers memories, she is haunted by what was repressed. The ocean is like the unconscious—and like the internet, the unwanted, suppressed material which has disappeared beneath its surface returns disguised as flotsam: “fishing lines, floats, beer cans, plastic toys, tampons, Nike sneakers” (8).

One day, combing the beach and collecting refuse, Ruth finds a lunchbox wrapped carefully in plastic freezer bags and containing a collection of papers written in English, French, and Japanese, dating from the 1940s and the 2010s. *A Tale for the Time Being* is made of alternating passages of the stories of the second protagonist, Nao, a Japanese teenager who recorded her life in her diary and put it in the box, and Ruth, who is reading this diary to Oliver, deciphering other papers and trying to find out more about Nao and her family on the internet. The two intertwined main storylines are thus disrupted by embedded related explanatory peritexts that Ruth reads and writes. They are a translation of the French text, which is the secret diary of Nao’s kamikaze great-uncle, written during his military training; a translation of his letters home in Japanese; long passages quoted from a website about suicide which Ruth consults during her research into Nao’s family history; Ruth’s e-mails to a Stanford University professor who, she guesses, might know Nao’s father; the professor’s replies; and an abstract from a research article about Japanese literature written by Nao’s great-grandmother. Additionally, in the novel we find a quote from a thirteenth-century Buddhist treatise, six appendixes (on Zen, quantum mechanics, Japanese temple names, Schrodinger’s cat, Hugh Everett, and a quote from an early twentieth-century Japanese poem by a feminist author), a bibliography, and acknowledgements. The author of *A Tale for the Time Being* is Ruth Ozeki whose name and biography (judging from websites the reader has to find themselves if they care to do so) are uncannily similar to what we know about Ruth, the protagonist, and both women are working on a novel, the entanglement of facts and fictions is complete. The novel is itself a liminal space where distinctions and identities blur in an ocean of interconnectedness. Both Ruths refer to quantum physics, Buddhist thought, Japanese history and Japanese mangas, American history and mass media, environmentalist discourse and poetry ... to create a novel about “a disintegration of the individualist self” (Lovell).

The formal complexity of Ozeki’s text, which has been noted and analysed by critics (Masami Usui, Marlo Starr, Daniel McKay, Sue Lovell, Yungsuk Chae), is breath-taking as this novel combines a number of discourses (Buddhism, ecofeminism, cli-fi, posthumanism, metafiction, quantum fiction) and systematically obliterates their clear-cut definitions by creating a patchwork of interconnected text fragments. Thus, it is possible to choose one of these approaches and read the novel in diverse

ways, yet at the same time always keeping in mind other possibilities suppressed by this decision. As a Doomsday Clock Narrative, *A Tale for the Time Being* tells the story of life in a liminal space and in-between two catastrophes: traumatised by the past, the characters struggle with memories of calamities and think about the polluted world around them in relation to an approaching disaster. The story of novelist Ruth and her environmentalist husband is full of descriptions of rubbish, pollution, and waste: they strive to care for the environment but are overwhelmed by the sheer ubiquity of anthropogenic destruction of the planet. The eight Great Garbage Patches in the world's oceans, the biggest of which is “half the size of the continental USA” (36) and made of dumped soda bottles, freezer bags, industrial waste, and the like, are continuously growing as people throw away “anything that floats” (36). Only very few pieces of rubbish escape the gyres and, after many years, are finally washed ashore. Sucked up by the ocean gyres, most objects are forever slowly eddying around for decades, being ground into small particles which fish then eat. “Plastic ... never biodegrades. It gets churned around in the gyre and ground down into particles. Oceanographers call it confetti. In a granular state it hangs out forever” (93). The Great Garbage Patches, despite their enormous sizes, seem invisible to most people; they are beyond the horizon, in areas we choose not to see. Ozeki makes the garbage and the granular matter represent humanity's destruction of the planet, and they are mementoes of violence we prefer to forget. Yet, they are not just metaphors: the rubbish is there, the fish feed on plastic, the materiality of pollution is not to be obliterated by making them rhetorical devices. These objects do have the “thing power” which Jane Bennett analyses in “The Force of Things: Steps toward an Ecology of Matter,” and they change the globe.

Plastic is not the only pollutant Ruth and Oliver worry about; in April 2011, just after the catastrophic tsunami hit Japan, “they pumped thousands of tons of seawater into the reactor at the Fukushima nuclear plant in an attempt to cool the fuel rods and prevent the reactor melt-downs” (196). This strategy, nicknamed “feed and bleed,” created enormous amount of contaminated water which then leaked into the Pacific. Eddying in the gyres, travelling all over the ocean, the radioactive water contaminated marine fauna as far west as Canada. The invisibility of this uncanny danger and the longevity of pollution make Ruth and Oliver apprehensive: they read about Fukushima on the internet, they remember media coverage of the tsunami (which, first and foremost, they believe to have resulted from anthropogenic climate change), and they expect similar calamities to recur. The Fukushima disaster involves the three kinds of trauma which combine in *A Tale for the Time Being* to produce anxiety. Firstly, the violent events which happened in the past still influence the characters' lives, making them experience posttraumatic stress. Secondly, the characters are

suffering from vicarious trauma, whose source is media coverage of calamities (terrorist attacks, tsunamis, earthquakes, climate change-related catastrophic events), so by watching TV and reading websites, they participate in the suffering which is happening now in faraway places. Thirdly, their awareness of all the suffering inflicted by people on other people, and on the wildlife in the past, and their knowledge of the present environmental crisis, results in habitual worrying about the future of the planet and thus in pretraumatic stress.

It is the interconnectedness of all things that makes Ruth feel for the whales slaughtered for centuries in Desolation Sound by Inuit whalers and white settlers, and which were killed for sport during World War II by American pilots: the creatures have “long memories” (58), and only humans forget the violence and cruelty. An animal killed in 2007 near the Alaskan shore was found to have the 120-year-old arrow-shaped tip of a lance embedded in its blubber—a tangible memento of the days when Whaletown was founded. It was the whalers who first settled there replacing the local population. The island Ruth lives on used to belong to indigenous tribes, and she, a Japanese American woman originally from New York, is aware of the usurpation: whale-killing people from the south, her people, were responsible for the suffering of the natives. Interestingly, on the other side of the Pacific, in Japan whence her ancestors came, a very similar thing happened. The island of Fukushima (which literally means “Happy Island”) “was one of the last pieces of tribal land to be taken from the indigenous Emishi, descendants of the Jomon people, who had lived there from prehistoric times until they were defeated by the Japanese Imperial Army in the eighteenth century” (141). All over the globe the history of human civilisations is a history of violence, violence whose perpetrators and victims were our forebears, their bloodlines spanning the centuries.

In the freezer bag-wrapped lunchbox Ruth finds, among other texts there is the secret diary of a young philosophy student who, during the war, was forced to become a kamikaze pilot. Bullied and laughed at by his officers, he records his suffering, as seventy years later his great niece would also do, being mercilessly physically and sexually bullied in a modern Japanese school when she returns from the United States after her father loses his programming job in Sunnyvale. Recently, technological development has only made humans more cruel and dangerous: Nao’s ordeal is uploaded to the internet—a fake video of her funeral titled “The Tragic and Untimely Death of Transfer Student Nao Yasutani,” as well as a video of her attempted rape by her schoolmates in the school bathroom, are both posted online, “dumped” onto the World Wide Web just like the diaries in the box were thrown into the Pacific. These traumatic moments from the past—the historical suffering of indigenous people, the pain of animals

slaughtered in their thousands, the ordeals of individuals who underwent torture, the traumas of the victims of natural disasters and human-made catastrophes—are all repressed, but, for a time, they re-emerge and return.

Thanks to modern technology Ruth is directly connected to those who suffer today, she participates in their pain through vicarious trauma. In September 2001, during a short holiday in rural Wisconsin, she learns about the terrorist attacks in New York and, standing on a picnic table on a small hill, tries to get a mobile phone signal. Finally, having managed to call one of her Brooklyn-based friends who watches through her kitchen window the falling towers, Ruth feels that she is with the victims at precisely the same moment. This scene symbolises the connectedness of the modern world: the satellite signals, the mobiles, the TV she watches all the following afternoon, they all allow her to suffer with others. Ten years later, in April 2011, she does the same: she “groans” watching internet sites reporting on the tsunami and the subsequent Fukushima nuclear catastrophe—“crackpot” religious leaders preaching that the earthquake has been sent by angry gods to punish the Japanese for their materialism, nuclear plant workers battling the meltdown at Fukushima, and “the Senior Certain Death Squad, made up of retired engineers in their seventies and eighties, [who] volunteered to replace the younger workers” (86). Reading about the disaster which has hit her native islands, Japan, Ruth experiences vicarious trauma: the Fukushima fall-out brings to mind memories of the atom bombs dropped on Japan in the 1940s, while the Senior Certain Death Squad initiative is an uncanny echo of the kamikaze pilots sent on suicide missions during the war. The ghosts of the past haunt Japan, and Ruth “groaning” at her laptop participates in the trauma: she calls the religious maniacs “crackpots,” and she does not believe in the ancient gods of the islands, but it is difficult not to blame the tsunami on anthropogenic climate change and not to see the connectedness of things: killing whales, buying tonnes of high-tech gadgets, and steadily rising mean temperatures. Suicide, the keyword she types into her search engine, is the common denominator of many themes in the novel: Nao’s diary was written because she decided to kill herself and wanted to leave behind a record of the life of her 104-year-old great-grandmother, who was a Zen Buddhist nun. Nao’s father attempted suicide twice and exchanged e-mails with the Stanford professor whom Ruth used to know and whose website about suicides she consults. On a more general level, *suicide* describes human civilisation of the last couple of centuries: from the Japanese and the American colonial enterprise, to producing plastic, founding towns below a line of 600-year-old stones with the inscription DON’T BUILD YOUR HOMES BELOW THIS POINT!, and forcing people to live in the constraints of a violent state apparatus and its institutions (such as Japanese cram schools or the Imperial Army).

Watching internet sites devoted to Fukushima—the 2011 tsunami and the nuclear plant’s meltdown—Ruth feels overwhelmed by the tide of images and stories: the footage “shot by panicked people on their mobile phones from hillsides” (113), showing a gigantic wave, images of tiny cars floating in black water, voices of people running who have no hope of survival. Watching death online, Ruth enters a trance-like state: for hours she trawls the internet for news about people she knows, then the “images pouring in from Japan mesmerise her” (112). She is glued to her laptop, which shows people in vast fields of debris searching for their lost family and friends, saying things like: “It’s like a dream ... I keep trying to wake up. I think when I wake up my daughter will be back” (111). Ruth feels she is sharing this horrible dream with the Japanese on screen; she feels connected with them, involved in the tragedy. The internet allows her to experience vicarious trauma simultaneously with the victims and also to later relive the experience. Just as the Pacific gyres bring the Japanese lunchbox (which may well have been taken by the very same tsunami a few years earlier), the internet brings the footage posted by the inhabitants of this district, perhaps just seconds before their demise. Both testimonies communicate trauma and approaching death, and in both cases the described calamities are, at least partly, human-made, as it is other people who directly or indirectly cause the suffering.

More and more people suffer from climate change-related events and human-made objects—the contaminated water from Fukushima, and the particles of ground-down plastic from the Great Garbage Patches spread all over the ocean incessantly causing more and more harm. The earth changes: its climate and its biosphere are subject to an irreversible process of destruction. It seems fair to assume that catastrophes will happen, people and wildlife will be decimated, and the future of the environment is bleak. Eco-anxiety, historical trauma, and vicarious trauma make people like Ruth prone to pre-TSS. Environmentalists cannot help imagining some post-human world where there is no civilisation anymore. Ruth’s husband even enjoys such a prospect because he plants trees for the post-human, hotter world: “ancient natives—metasequoia, giant sequoia, coast redwoods, *Juglans*, *Ulmus*, and ginkgo—species that had been indigenous to the area during the Eocene Thermal Maximum, some 55 million years ago” (61). Thus, an escapist dream of a distant, future paradise sustains Oliver and diverts his thoughts from worrying. Ironically, tending saplings, he breaks a covenant according to which only “the species that were native to that geoclimatic zone” (120) should be planted in this part of British Columbia. Oliver is waging “a Covenant War” with local environmentalists, so he also gets in contact with societies and groups such as the New York-based Friends of the Pleistocene. Coping with eco-anxiety

by taking the long view and cherishing the prospect of a human-free earth can be an effective psychological strategy. But not for everybody—Ruth, in a far corner of North America surrounded by vegetation and far away from “the built environment of New York,” is “increasingly unsure of herself” and feels “engulfed by the thorny roses” of the lush vegetation (61). She misses other people, and for her the end of the human era—and all the suffering involved in it—is not a joyous prospect. The reintroduction of once numerous and then nearly extinct species, such as whales and wolves, to British Columbia gives her a glimpse of what the post-human future might look like. Yet, simultaneously, she is aware that the environmentalist dream of wild beasts repossessing the earth is a merciful lie people like she and Oliver tell themselves to feel better in the last comparatively happy years. Eating with Oliver shellfish, freshly harvested from the ocean, she thinks about the radioactive Fukushima water that “bled” into the Pacific on its Japanese shore a few years earlier, and of the ocean currents spreading the pollution. The shellfish might already be contaminated. She knows how lucky she is to “live in a place where the water is still clean” (188) and asks herself how many years have passed since the last shellfish were harvested from the beds near Manhattan. These thoughts make her share with her husband the fundamental question of all the Doomsday Clock Narratives: “I wonder how much longer we have ...” (188).

It is the awareness that we, in fact, do not have “much longer” before the final environmental catastrophe that makes *A Tale for the Time Being* akin to disaster fictions written during the Cold War. Ozeki depicts a world languishing between great catastrophes: recent history has been a chain of disasters, from World War II to 9/11, to early twenty-first-century climate change-related calamities. The posttraumatic stress these events provoked makes contemporary people prone to pre-TSS, and the vicarious trauma they experience when exposed to modern communication networks reporting calamities live increases their eco-anxiety. Ozeki’s characters live interconnected with other beings—their long-dead relatives, people they watch suffering on screen, animals, and plants—and they share their traumas. Counting down the remaining moments of human time and calmly letting things happen is all they can do: acceptance and interconnectedness give them comfort. It is the objects that surround them—plastic lunchboxes, pieces of stone warning against tsunamis, letters and diaries from the past, websites and blogposts, Buddhist temples, steps cut in rock slopes—that are going to stay and tell their stories in the future. The ocean and the internet symbolise the unconscious; they retain the past, bring back mementoes, preserve emotions. Seashore beachcombing and web surfing are liminal activities which make us connected to what has been repressed and to realise that the traumas will come back tenfold.

Yoko Tawada's *The Last Children of Tokyo*

Gee describes the twilight of the civilisation we know; Bacigalupi depicts a plague-ridden future where people are being replaced by cyborgs; Ozeki's protagonist wonders "how much longer we have," but it is Yoko Tawada in her short elegiac novel, *The Last Children of Tokyo*, that presents the most radical vision of environmental disaster. Tawada describes the very end of life on a contaminated earth which comes not in the form of a momentary gigantic disaster but as a few decades of slow agony. In a world where, for nearly a century, people have been born too weak and sick to last long, the generation of great-grandparents are left with their very young and very ill great-grandchildren and have to watch them slowly die. These are the final years of the grand global countdown, which *The Last Children of Tokyo* describes in an oneiric, fable-like style. The last goodbye is bid by the centenarians to their beloved charges on the shores of a polluted, dead ocean where there are no fish and no birds. The last children perish noiselessly, metaphorically transformed into delicate birds from traditional Japanese folktales.

In a future depopulated Japan in a world destroyed by a chain of anthropogenic disasters, the centenarian Yoshiro lives with his great-grandson Mumei on the outskirts of a contaminated Tokyo. Mumei and his classmates are feeble, with malformed teeth, bones too deformed to walk, and severe food intolerances. The world they live in is dystopian: the Japanese government prohibits the use of foreign languages; there is no international traffic, travel, or communication. The rest of the world may as well already be dead. Yoshiro and other great-grandparents are frustrated and angry, trying in vain to find a cure for the children; they start to believe that somewhere in the West some mythical international scientists may find out what is wrong with the young Japanese and help them. Mumei and his friend, Suiren, are persuaded that they should be emissaries sent from Japan to help the research. At 15, they cannot walk anymore and, in the final scene of the novel, reach the seashore on their powered wheelchairs and fall dead into the dark waters.

This dystopian Japan is shut off from everything foreign: learning English is a crime, the economic situation in the country is tragic, and the use of electrical appliances is prohibited under the pretext that electric current causes "nervous disorders, numbness in the extremities, and insomnia" (50). It is very difficult to guess what actually happened and what the reason is for the political isolation of Japan. We only learn that "until just recently [the country] was still much closer to the continent, but the last big earthquake left a deep crevice in the seabed, pushing our archipelago much farther away" (120). The children at Mumei's school repeat their great-grandparents' opinion that "Japan did something really bad so

now the continent hates us," and the teachers add that "Japan isn't the way it is now just because of earthquakes and tsunami. If natural disasters were the only problem, we certainly would have recovered long before now" (122). Although the nature of the offence is never revealed, the country suffers spiritually, and the death of its young symbolises its moral decay: the opening of a new chapter in the world's history is impossible.

The unnamed crime of the past has turned the islands into a contaminated wasteland whose wildlife is almost exclusively worms, which live in the contaminated earth so "the contamination gets concentrated in the worms" (22); birds are getting poisoned and consequently dying out. Yoshiro, who cannot remember the last time he saw a dragonfly, tells Mumei that "in the past ten years lots of species have gone extinct" (32), and now there are no animals other than "rental" dogs and dead cats, the former living in rent-a-dog facilities where one can rent them for a morning jog. The central districts of Tokyo (and probably all big cities) are too polluted to enter and have been left intact and empty: with shops, sidewalks, traffic lights, and office buildings. Fish are highly contaminated and cannot be given to children, and even "no breast milk was guaranteed to be safe ... [and it] contained, along with its life-giving nutrients, a high concentration of poison" (73). In fact no animal protein grown in decades has been edible, and grownups have to try very hard to feed delicate feeble children. The safest bets are bodies of animals that were born a very long time ago: when flocks of dead penguins are washed up on an African shore, an international pirate gang dries the meat, grinds it up, and produces meat biscuits—"an ideal protein source"—for children. People buy them eagerly as the meat of birds who had lived in Antarctica "would probably not be very contaminated, though such a mass death might mean that an oil tanker had sunk nearby, which was worrying" (95). The poisonous food, the hazardous breast milk, the penguin biscuits, and not very contaminated calcium distilled from fossilised mammoth teeth symbolise the ecological crimes of the fathers which the children are paying for with their health. Mumei is too weak to chew rice toast; his mouth bleeds. He and his friends are not allowed to go near trees as all of them are sick, with hollow trunks so it seems that all that takes to destroy them is "a sigh from someone standing near" (100). The weather, the climate, the times of day are slowly disappearing: it is neither cold nor hot, neither dark nor light. Glass sheeting covers streets and sidewalks because "the contamination permeating the soil had seeped into the asphalt" (125); the air, the water, and the earth are poison; plants and animals die and so do people.

Those in their late seventies are the youngest healthy people; their children and grandchildren are all already dead. The very few new babies to be born have a life expectancy of barely over ten years. These children are deformed, unable to hold their heads up, and have to wear solar

energy-propelled musclewear suits. Finally, measuring children’s height has been abolished, ostensibly because it is considered inhuman to stretch children out to measure their length “as if they were pieces of cloth or string” (11). Yoshiro is doomed to watch his great-grandson’s health deteriorate. In his early teens he has to use a breathing machine, and in order to talk, he needs a special wristwatch as his vocal cords are no longer capable of emitting sounds. Mumei’s slow agony starts very early: his baby teeth one day drop out one after another “like pomegranate pulp, leaving his mouth smeared with blood” (15), and the dentists do not even try to help as kids of the last generation are unable to absorb the calcium they need. Yoshiro is aware that with every passing month Mumei is becoming weaker and weaker and soon would no longer be able to leave his house. Even drinking is not an easy task for Mumei; he has to force the liquid down, and it will “come back up, burning his throat ... or ... enter his bronchial tubes instead, bringing on a coughing fit” (33). Kiwi fruit makes him suffocate; lemon juice paralyses his tongue; spinach gives him heartburn. “Every bit of food he put in his mouth was a challenge. If sour orange juice bit into his stomach wall, he’d lose all its nourishment ... his stomach would ... be desperately battling today’s bean fibre, not producing enough digestive juice to win” (94). The boy is always slightly feverish, like all his friends, and the adults are told not to check the thermometer as it only makes them upset. These children are always sick, and they cannot stay at home because of fevers, the school flier says. The paediatricians examine the children monthly, assessing the damage, but everybody tries to take it lightly. Yoshiro does not ask about the numbers the doctor writes down, “certain that only pain and death lurked behind them” (20).

With the last children of Tokyo slowly dying, the authorities redirect their attention to the elderly and the trauma they suffer being unable to help their charges. The kids are beyond salvation, so paediatricians themselves should be taken care of instead: they are suffering from insomnia and are even driven to suicide by the helplessness and frustration they experience every day. Finally, they form a trade union, refuse to do paperwork and submit reports to insurance companies, and demand a reduction in their working hours. As saving the children is impossible, it is worthwhile not to let the adults suffer too much over this loss. Similar administrative attempts to reduce stress by promoting a light-hearted attitude to the inevitable stretch to all spheres of public life: no one tries to reverse the final catastrophe (as humankind is already doomed to go extinct), but it becomes essential to fight the pre-TSS of the elderly, who will linger on a few decades more, counting down the years till the last of them dies. Words such as “extinction” or “pollution” are not taboo anymore; the internal policy is to admit—even to emphasise—that the end of humanity and the environment is already happening. Accepting the blame without making

too much of it and taking disaster in your stride as something “natural” are the official strategies for coping with the masses of frustrated centenarians, which the renaming of state holidays symbolises: Respect for the Aged Day becomes Encouragement for the Aged Day; Children’s Day is changed into Apologise to the Children Day; Sports Day is Body Day (children are too weak to do any sports); Labour Day is replaced with Being Alive Is Enough Day. A new holiday, Extinct Species Day, is created, and on this day people light “sticks of incense in memory of birds and animals that had vanished from the earth” (44).

The politicising of ecological grief is meant to subdue anger and despair, since the elderly are not allowed to give in to frustration. Their anticipatory grief for the eventual death of the last children, and unbearable distress they feel when they realise that their grandchildren are in such a sad state because they have destroyed the planet, is so very subversive that it has to be channelled. The elderly professors, businessman, and officials are encouraged to enter Cleaning Outhouse Brigades and do voluntary service at schools; laughing and joking, they help the children too weak to go to the outhouse on their own; and the Women Rescue Brigades of healthy aunties rush to help them when they stumble and fall. In such a world, Yoshiro suffocates due to unbearable anger: when the dying Mumei dreams about a picnic in a field while all the fields are contaminated and there is not a single blade of grass, he cannot restrain himself anymore. It is only the patently absurd hope of sending Mumei as “an emissary” to be cured by “international scientists” that sustains him long enough to care for the boy until his death in the liminal space of “the pitch-black depths of the strait” (138).

The Last Children of Tokyo is a dystopian novel depicting the agonising experience of the elderly, who watch all the life on earth—their descendants included—perish, which happens within the constraints of a political state which, by imposing its propaganda, strives to maintain social order. This bleak vision is enriched yet further with fable-like elements introduced in metaphors and similes. The figure of Mumei, whose love for Yoshiro and the forgiveness he offers unasked transcend realist discourse, figuratively becomes a spiritual leader and a representative of the “generation [who] might create a new civilisation which they would leave to their elders” (36). The children, who are imbued with “a mysterious kind of wisdom” (36), teach the elderly how to die gracefully and without fuss, accepting their fate and not blaming the catastrophe on anybody. Mumei is repeatedly compared to a delicate bird: his narrow breast, long feeble legs, and dance-like walk are suggestive of flying away. The environmental disaster described in *The Last Children of Tokyo* is final; Tawada does not leave any doubts and tries to offer no hopes. Her book is the ultimate Doomsday Clock Narrative: the counting down of the remaining years of humanity

on earth is reaching its end; the post-human contaminated planet will soon be devoid of biological life. The action takes place in the interlude between the unnamed disaster which Japan somehow caused or prompted and the terminal catastrophe. Mumei symbolically represents the world, and, as he dies in the final sentence of the book, it can be said that the terminal catastrophe actually happens within the narrative. Yet the most distinct feature of the novel is the pre-TSS of the characters, the muffled anger, guilty frustration, and the anticipatory grief they suffer.

These books by Maggie Gee, Paolo Bacigalupi, Ruth Ozeki, and Yoko Tawada were written in the thirty years following the fall of the Berlin Wall and the end of over four decades of nuclear threat in a world that was facing new kinds of dangers. The most recent of these books was written before the 2020s, a decade which so far has seen the Covid pandemic and the war in Ukraine, during which the half-forgotten nightmare of the actual use of atomic weapons has been reawakened. Yet already, the severe environmental crisis, the fifth extinction, tsunamis and hurricanes, the melting of icecaps, and the outbreaks of new diseases resonate in these Doomsday Clock Narratives. Their action is often set in diverse kinds of liminal space: the ice-covered English Channel and the freezing Mediterranean, the flooded Bangkok, the Pacific shore, eddies around the Great Garbage Patches, the polluted straits between Japanese islands. The settings differ from what the readers of disaster fiction are accustomed to; the centres of civilisation—London, New York, Tokyo, and Los Angeles—are absent or not prominent. It is rural European areas, Thailand, British Columbia, and the far suburbia of Japanese cities that the characters live and face their death in.

It is there that humanity fights pre-TSS, aware that our time on earth is running out and people may soon perish or be replaced by their technologically enhanced descendants. Counting down the remaining years (and then months), Gee's Saul tells his story; the exhausted multinational inhabitants of Bacigalupi's Bangkok repeat to one another the soothing myth of Noah and the seedbank-cum-ark which is going to save them; the carefully preserved diaries and letters record the traumas and moral victories of Ozeki's protagonists; the traditional fables and wish-fulfilment stories of scientific deliverance soothe Tawada's last Japanese. These are all stories recording the emotions of people facing catastrophe, which is the most prominent common denominator in all Doomsday Clock Narratives.

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Conclusion

Reading Climate Anxiety through the Lens of a Nuclear Holocaust

This book devoted to Doomsday Clock Narratives—which I define as stories obsessively focused on an imagined approaching future calamity—starts by reminding the reader of Enrico Fermi. In Pohl’s nuclear holocaust story, “Fermi and Frost,” an unexpected, brief nuclear war ends in the annihilation of nearly the entire human race and the advent of a nuclear winter. The question of whether catastrophic climatic change resulting from the use of atomic weapons is going to kill off the few survivors is left open, leaving the reader with little hope that humanity will squeeze through the bottleneck and recreate a better world. The story is important for my discussion of (eco)anxiety for two reasons: firstly, it directly links nuclear and climate catastrophes, which become two sides of the same coin—one single, probable, horrid nature-killing event. Secondly, it refers to Fermi’s famous hypothesis that as soon as any intelligent race evolves to be smart enough to travel into space, they will bomb or pollute their planet and annihilate themselves—which explains why no aliens have ever visited or contacted humanity.

If we are doomed to kill ourselves off because of some universal law of cosmic evolution, and if our free will has always been but a hubris-fuelled illusion, the coming disaster is unstoppable. The more often terrifying things happen because of humanity’s abuse of technology (the nuclear bombings of Japan during World War II, the meltdowns in Chernobyl and Fukushima, global warming, the reduction in biodiversity, to name just a few), the more probable the inevitable suicide of our species appears and the more frustrated we get. Remorse and dread breed subliminal anxiety and result in the spread of pre-TSS, which has only been defined recently but which, this book claims, has been part of global psychodynamics since 1945. Throughout this period, writers of speculative fiction have tried to address our latent anxieties by creating stories which happen just before the inevitable demise of humanity (although how they technically imagine this demise does vary). The pre-TSS suffering characters in these narratives are aware that their world will soon end, while their narrators periodically

adopt the point of view of a post-human lifeless future and often resort to geological metaphors and symbolic timepieces.

J. G. Ballard's "The Voices of Time" was given as a prime example of a Domsday Clock Narrative, and its analysis allowed me to define the set of features characterising these texts which all are disaster fictions and yet belong to different subgenres of speculative literature. Then, after a brief account of the history of nuclear holocaust fiction and climate fiction, in my three analytical chapters, I discussed a selection of Domsday Clock Narratives dating from the post-World War II period. Nevil Shute's *On the Beach* and Walter M. Miller's *A Canticle for Leibowitz* were proffered as paradigmatic Domsday Clock Narratives of the nuclear era. My reasons for choosing these books were (1) they show the inevitable end of the world via a nuclear war in two complementary ways: Shute does so from the limited point of view of just a few protagonists who suffer pre-TSS, are isolated from most of the world, and know very little about the global situation, while Miller does it in a very broad timeframe of over a thousand years, seen by both a group of people from different eras and, in places, by a heterodiegetic disembodied quasi-omniscient narrator; and (2) both books, albeit very popular in their day, are undeservedly half-forgotten and are definitely worth reading today, as the psychological reactions to the traumas they depict seem uncannily up-to-date.

Next, I presented a selection of texts written in the later decades of the Cold War (and yet before climate change was a part of the public discourse) which describe climate-related catastrophes. I claimed that they are not prophetic visions of global warming written half a century before the actual event. Rather, these novels manage to communicate the pre-TSS characterising Western culture in the period they were written in and which we suffer from today—and that is why they strike us as being so uncannily up-to-date. They do so by projecting the (eco)anxieties, remorse, and frustration of the protagonists onto landscapes. I read John Christopher's *The World in Winter* (a text which possesses some, but not all, of the characteristics of Domsday Clock Narratives) while referring to the Freudian notion of the return of the repressed and demonstrating that the climate catastrophe there embodies the historical post-imperial guilt of the British. My reason for choosing this book was to show how, in the early 1960s, speculative fiction started to reflect not only fear of a coming war but also more complex collectively felt emotions. My reading of J. G. Ballard's *The Drought* served to depict the affinities of PTSD and pre-TSS—I showed that Ballardian disaster areas are simultaneously projections of remembered war traumas and anticipations of anthropogenic catastrophes to come. Via the use of similes, flash-forwards, and symbolic images, his novel communicates the acute anxiety (and the resulting numbness)

of mid-twentieth-century Western culture in the most poignant manner. George Turner's *The Sea and Summer* was then chosen and discussed as a transitory work: written in the first years of global warming, it both warns against the looming climate change and projects current social anxieties onto landscapes. Finally, in Chapter 6, I analysed in chronological order recent cli-fi Doomsday Clock Narratives. My choice of novels was dictated by how they render the growing subliminal unrest of the last three decades. Maggie Gee's *The Ice People* depicts the sad end of Western civilisation and the barbaric postapocalyptic future of its primitivist offspring. In Paolo Bacigalupi's *The Windup Girl*, the biosphere is damaged beyond repair and the future belongs to genetically modified post-human descendant races. In Ruth Ozeki's *A Tale for the Time Being*, which poses the question of how much time is left till the end of the human world, there is no chance for any descendants at all. Yoko Tawada's *The Last Children of Tokyo*, meanwhile, paints the gloomiest picture of the end of all life. These books present increasingly more extreme visions of disaster in a world where the countdown has started, our doom is certain, and all that humans can do is mourn the planet and their own race. Similar traumas and frustrations permeate other recent disaster fiction works, including such classics as novels by Margaret Atwood and Cormac McCarthy, which I regretfully decided not to discuss in this chapter as they have already been analysed from the eco-critical perspective numerous times. For the sake of brevity, I also limited my investigation to literature, although I hope an analogous analysis of twenty-first-century disaster movies conducted from the perspective of film studies will one day be written and prove intellectually satisfying.

Having demonstrated the striking similarities these nine, seemingly very different, novels display when read with the notion of pre-TSS in mind, now it is time to justify the claim that their common features are more than superficial affinities. Is the category of Doomsday Clock Narratives useful, and is an Anthropocene-inflected reading of nuclear disaster fiction informative? What has such an approach to offer trauma studies, and can speculative fiction written many decades ago in a different sociopolitical reality enrich contemporary culture? Is the selection of novels discussed in *(Eco) Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives* sufficient to demonstrate that (eco)anxiety is inherent in all post-1945 culture from the West?

The Uses of Doomsday Clock Narratives

Climate change has been an increasingly important subject of public discourse for over thirty years, and, consequently, it has permeated contemporary culture and been repeatedly fictionalised and theorised. Climate fiction is written, read, filmed, watched, and even taught in academia.

Numerous scholars have explored this genre, discussed its foundations, and demonstrated how cli-fi imagines the far-reaching consequences of ecological crises as well as the social and psychological reactions to ongoing extinctions. New terms are being coined to denote diverse facets of the genre—for example, in 2016, Antonia Mehnert proposed climate change fictions, and five years later, in 2021, Sarah McFarland coined the term ecocollapse fictions. Both critics neatly define, and persuasively argue for the applicability of, their respective classifications of texts. In *Climate Change Fictions: Representations of Global Warming in American Literature*, Mehnert discusses novels explicitly devoted to anthropogenic climate change, identifies the narrative strategies used by the authors, and explores how they deal with scientific controversies, vast time scales, and the global spatial dimension of climate change. She is especially interested in how the scientific and the human realm intersect—how statistical diagrams, emission data, and climate forecasts defamiliarise nature and how cli-fi communicates environmental crisis.

Sarah McFarland, in *Ecocollapse Fiction and Cultures of Human Extinction*, invents a much narrower category and very convincingly demonstrates that what she calls eco-collapse fictions—stories that depict genuine disasters and make the reader face the necessity of human extinction—form a separate group within cli-fi. Her reading of novels by, for instance, Peter Heller, Cormac McCarthy, and Yann Martel focuses on depictions of future worlds where there are no postapocalyptic neoprimitive societies which, thanks to some yet unimaginable miracle, managed to stay relatively intact on a depopulated earth and are busily rekindling civilisation. She contrasts her eco-collapse fictions with recent iterations of cosy catastrophe written according to the “traditional generic conventions that display a predilection for happy endings by imagining primitivist communities of human survivors with the means of escaping the consequences of global climate change” (McFarland 2). *Ecocollapse Fiction and Cultures of Human Extinction* persuasively argues that the tacit consensus that the human race is simply too exceptional (e.g. intelligent, creative, empathic) compared to other species to perish underlies most postapocalyptic texts. This inherent anthropocentrism makes postapocalyptic fictions nothing more than consolatory lies which, against a backdrop of a global extinction of species, give solace to readers traumatised by the constant media coverage of climate calamities and environmental disasters. By contrast, eco-collapse fictions probe our capacity to go outside our comfort zone and face the probabilities of our own extinction.

Mehnert and McFarland are merely two names among the many ecocritics and climate fiction scholars whose papers chart the recent speculative response to the environmental crisis. Many attempts to theorise the apocalypse are referred to in this book, and some—most prominently that by

Robert Jay Lifton—discuss the long-term consequences of nuclear disasters and climate catastrophes side by side. Interestingly, some phenomena, such as the already-mentioned (nuclear) winter, fall within both these groups of consequences. Thus, discussing nuclear war together with climate change has already been done, and proposing yet another special term, Doomsday Clock Narrative, to do the same may seem excessive. However, the phrase “Doomsday Clock Narrative” resonates with its associations with the Cold War’s five-to-twelve clockfaces as seen on old magazine front pages and in mid-twentieth-century newsreels and music videos by pacifist pop stars, and thus the term sounds useful. Moreover, it brings forth the uncomfortable idea of the constant tick-tock of clocks and calendars devised by environmentalists, who claim that we have less and less time on our hands to act. Yet, in my opinion, Doomsday Clock Narrative is more than just an impressive coinage. Reading nuclear holocaust fiction and cli-fi side by side, with the notion of pre-TSS in mind, allows us to see that only speculative fiction is capable of unearthing the anxieties pestering Western culture over the last three-quarters of a century.

According to Ursula K. Le Guin, “one of the essential functions of science fiction” is to go beyond the range of current human experience and create “metaphors for what our language has no words for as yet, experiments in imagination” (159). Doomsday Clock Narrative is precisely such a metaphor, expressing what is inexpressible (at the time these narratives are being written) and giving vent to suppressed emotions. Doomsday Clock Narratives address the subconscious dread of an approaching, irrevocable end to human life. Such apprehensions have characterised not only the last two decades, when climate issues have been discussed (at least in the West), but a much longer period of recent history. Regardless of the comfort-giving function of the greater part of postapocalyptic writing (I do agree with McFarland that this is the case), some narratives written in the 1950s as well as the 2010s are Le Guin’s “experiments in imagination,” aimed at picturing humanity’s demise in all its pathos and all its plausibility. The ways in which the final disaster is depicted vary, and some narrative techniques used in the texts written over the span of seventy years, of course, evolve, but reading Doomsday Clock Narratives as one category allows us to see that there are uncanny resemblances in these “experiments.” I have argued in *(Eco)Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives* that they result from a uniformly traumatic culture we have been living in since World War II. Despite all obvious social, economic, and technological developments, today—just like yesterday—Western civilisation is forced to cope with pretraumatic stress. Although every decade we keep imagining anew the looming final disaster, the (eco)anxiety expressed in Doomsday Clock Narratives has similar symptoms.

Consequently, my analysis of the selected Doomsday Clock Narratives often referenced trauma studies and—indirectly—psychoanalysis. I attempted to demonstrate that nuclear holocaust novels and climate fiction, by creating disaster fantasies, allow their readers to identify latent fears that cannot be depicted mimetically. Doomsday Clock Narratives, just like Gothic fiction, by painting uncanny pictures of terrifying landscapes, give vent to pent-up fears and apprehensions.

SF has a continuing and expanding role as an imaginative interpreter of the future ... The biggest developments of the immediate future will take place, not on the Moon or Mars, but on Earth, and it is inner space, not outer, that needs to be explored,

(197)

writes J. G. Ballard in “Which Way to Inner Space?”, his artistic manifesto from the 1960s, the period when he also wrote “The Voices of Time,” the paradigmatic Doomsday Clock Narrative. “Which Way to Inner Space?” was first published in *New Worlds*, an avant-garde literary magazine of the British New Wave in science fiction. Ballard (together with Judith Merrill) was the main theorist of this movement, and one of their most prominent goals was the transformation of pulp science fiction into thought-provoking speculative fiction, a genre capable of charting the inner space of contemporary people. Doomsday Clock Narratives do precisely this—they allow us to get a glimpse of what Ballard, an avid reader of both Freud and Jung, would call our collective unconscious.

My reading of Doomsday Clock Narratives shows that the way pre-TSS is communicated in disaster fiction is indebted to far more frequent presentations of PTSD in trauma stories set after wars and catastrophes. In both cases, traumatised minds are surveyed and the world is seen through the lens of the focalisers’ idiosyncrasies. In both cases the resulting narrative disturbances are temporal: PTSD sufferers experience flashbacks, they are doomed to live in the past, and their stories are not linear but interrupted by intrusive memories and haphazard retrospections. Pre-TSS sufferers are imprisoned in a calamitous future, counting down the days till Armageddon, but in fact they are already living within its confines. Their stories are interrupted by uncontrollable flash-forwards; looking at today’s world, they see its “true” future facet. Intrusive images of a post-human empty earth covered with new geological strata repeat. These descriptions are focalised from the perspective of non-human archaeologists researching the remains of our culture in the calamity-stricken future. In both cases traumas make the present seem unimportant. Moreover, as the comparison of J. G. Ballard’s posttraumatic and pretraumatic landscapes in *Empire of the Sun* and *The Drought* demonstrated, the pretraumatic flash-forwards

are modelled on traumatic images of past catastrophes. PTSD sufferers are prone to developing pre-TSS. An analogous mechanism is at work as far as whole cultures are concerned: traumatic images of war atrocities and natural disasters transmitted in the media spread pre-TSS. Then its victims, people who are subconsciously waiting for a similar catastrophe to come, feel vaguely apprehensive and search for ways to overcome their elusive anxiety. One such way is by reading Doomsday Clock Narratives.

Fall-Out and Flood

Studying Doomsday Clock Narratives enriches trauma studies, but in my opinion, it also brings other merits. Recently written climate fiction is usually analysed against the intellectually sound background of the ongoing eco-critical debate. The abundance of interesting essays written thanks to such an approach should not make us abandon reading recent novels in the context of older speculative fictions. Apparently outdated books, such as Christopher's *The World in Winter* or Turner's *The Sea and Summer*, reflect anxieties we still recognise. Additionally, reading texts written in the early days of the Cold War may be frustrating—the lesson they teach (that immediate disarmament is the only solution humans have) is obvious and yet, as we know full well, their authors failed miserably to persuade our grandparents' generation to change their ways and start caring about the planet. Their ideological messages are now clumsy and obsolete; in today's changed sociopolitical context, their didacticism is annoying.

Yet, it is definitely worth fighting to quell our annoyance and look beyond the outdated style of mid-twentieth-century catastrophe stories. Some of the current environmentalist discourse resorts to similar rhetoric, and it is good to remember that we are not the first generation to suffer denial, frustration, and fear. In the movie adaptation of *On the Beach*, a banner which reads "there is still time" invites people to confess their sins and prepare themselves for a Christian death. In the last days before the deadly fall-out, churches are crowded and conversions under the banner abound. In the movie's finale, after radiation has killed the last Australians, the same slightly worn-out banner presides over a depopulated and silent cityscape—now the "there is still time" slogan is addressed directly to the audience. The image is didactic and pathetic, but it is also poignant and not that much different to, say, the "#ActInTime" slogan of the Climate Clock project. Their digital climate clocks displayed on tall buildings in, among other places, New York, Seoul, and Glasgow announce the time left to limit global warming to 1.5 degrees centigrade. At the moment of writing, the clocks read "6yrs265days00:22:14" (climateclock.world), and I cannot help wondering what these cityscapes will look like in "our finale."

“I don’t believe it is happening,” repeat the characters of numerous nuclear holocaust fictions at the moment the atom war actually commences. What they find so shocking is the Wildean “life imitates art” illumination; they recognise in the events happening around them the stale clichés from B-movies that feature a catastrophe. Similar sentiments are felt by the victims of climate-related catastrophes—the images of weather calamities they remember from the media are momentarily rendered only too real. Both these anthropogenic disasters, the fall-out and the flood, are facets of the very same human propensity for self-destruction. Therefore, it is far from surprising that some of the first studies devoted to eco-anxiety and climate change-related neuroses, and referred to in *(Eco)Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives*, were published in the *Bulletin of the Atomic Scientists* (BAS). The very same periodical which, in 1947, created the first Doomsday Clock to indicate the likelihood of nuclear war is today engaged in the climate debate. Its website is adorned with numerous Doomsday Clock icons. Thus, although a nuclear holocaust is usually imagined as a single tragic event which transforms the beautiful world around us into miserable contaminated rubble, while climate change is less sudden and less tangible, mid-twentieth-century culture can teach us a lot about pre-TSS.

As long ago as October 1945, George Orwell in “You and the Atom Bomb,” a column published in *The Tribune* (which I mentioned in this book), discussed the possibility that “we all” (by this phrase he meant the “big public”—people who read *The Tribune* and other Western media and are aware of current public discourse) were going to be blown to pieces within the following five years. Orwell expressed his surprise that this immediate danger was not transforming the West, and that people went on going about their daily business and did not think much about the bomb. In anglophone newspapers there were numerous articles about chain reactions, with diagrams and snippets of information concerning protons and neutrons, which did not seem very alarming to average readers. The far-reaching implications of President Truman’s decision to use atomic weapons on Japan were largely ignored. Orwell angrily reminded his readers of the books of H. G. Wells and other disaster fiction writers who, for over forty years, had been warning readers about the danger of the coming self-destruction of the human race—all in vain. Read today his column sounds strangely familiar—if we replace the atom bomb with ecocatastrophe, fall-out with a flood, we see the very same denial characterising what people do and the very same anxiety they repress. Moreover, speculative fiction—then and now—brings forth our suppressed horrors.

In 1945 Orwell wondered what political and social life with the bomb was going to look like, while today intellectuals ask much more pessimistic

questions—concerning how to meet an environment-caused death. Roy Scranton, in 2015, wrote *Learning to Die in the Anthropocene*, where he described climate change in reference to his war experiences in Iraq, and in 2018, Robert Bringham and Jan Zwicky used the very same phrase when titling their book *Learning to Die: Wisdom in the Age of Climate Crisis*. Reminding their readers of Socrates' humility and wisdom in the face of death, they claim that what we need is compassion for non-human beings and “cleansing” grief to approach our own death and the death of the planet. “To hope for a technofix is to imagine, yet again, that calculative rationality can control the world; it is hubris” (30), Bringham and Zwicky aver. Accepting climate change and the inescapable end of Western civilisation is, in their opinion, the only ethically sound choice—we should live through the crisis and live with the awareness of our own culpability for inevitable ruin and devastation. “Learning to die” is learning to mourn, and “wisdom” is seeing through comfort-giving lies. In *Learning to Die: Wisdom in the Age of Climate Crisis*, Bringham and Zwicky advocate facing head on the repressed knowledge about catastrophe; Doomsday Clock Narratives show that if we do not do so, we experience (eco)anxiety and pre-TSS.

Mark Bould, in an illuminative book published in 2022 and tellingly titled *The Anthropocene Unconscious: Climate Catastrophe Culture*, traces the echoes of the Anthropocene (defined as the current age of numerous anthropogenic ecological catastrophes, e.g., climate change, extinctions, collapsing biodiversity, ocean acidification) in all facets of contemporary culture: horror movies, Hollywood franchises, postmodern novels, art house cinema. His point is that every story recently told in the West is a story about climate change, because climate change is the single most important thing which determines what we think about the world, about ourselves, and about the future. Following the Freudian logic of “slips,” he demonstrates that the more we try not to think or not to talk about unacceptable subjects, the more often the suppressed material leaks out. Parapraxes (just like dreams and jokes, Freud claims in *The Psychopathology of Everyday Life*) prove that the unconscious does exist, that humans do unknowingly use mental energy in order to avoid admitting to unpleasant (or socially unacceptable) truths. Bould's book goes beyond the mere exposition of how references to ecological disasters manifest themselves in all facets of our Climate Catastrophe Culture. He discusses the temporal dimension of climate change and how any given epoch can only be defined in retrospect, after it passes. He also talks about literature, especially novels, claiming that by focusing on mimetic representations of contemporary life they often fail to directly address climate concerns. And yet this inability to confront eco-catastrophe, which is caused by the novelists' preoccupation with the life of individuals and their

particular stories, means that the looming threat of the end of all life affects all art produced today.

Bould's book, published when *(Eco)Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives* was being written, offers various insights relevant to my thesis. Bould maintains that timepieces symbolise the linearity of human imaginings of the past, present, and future, that Freudian terms such as "denial" and "repression" help to describe the contemporary psychodynamics, and that eco-anxiety has recently become overwhelming. Conversely, my reading of *Doomsday Clock Narratives* supplements his argument by pointing to the fact that similar psychological and cultural mechanisms have been at work for decades, and that it is not only climate change that has been cyclically suppressed and exposed. Moreover, reading his critique of the contemporary novel with *Doomsday Clock Narratives* in mind proves critics-cum-science-fiction-writers, such as Le Guin and Ballard, right. Speculative fiction is (and for decades has been) able to reach into the collective unconscious and re-enact fears and anxieties in fantastic scenarios. Whether it is done to give us catharsis-like purgation (having experienced horror and pity we close the anxiety-revealing book, see the world around us intact, dismiss our worries with a casual "it was just a story," and feel better), or whether we mend our ways and actually start saving the world is, of course, another question.

"We," the Readers of *Doomsday Clock Narratives*

In *(Eco)Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives*, I claimed that the pre-TSS we suffer today is prompted by being exposed to traumatic images. Vicarious trauma transmitted by the media shapes our emotional lives even if we have never experienced nuclear war or climate-related catastrophes ourselves. Feeling apprehensive of a repetition of the calamities we saw on our screens, we are susceptible to pre-TSS, and suffering eco-anxiety makes us react emotionally to *Doomsday Clock Narratives*, an event which allow us to face our traumas.

In this book (just like in the above paragraph), the words "we," "us," and "our" were used very many times but never in fact defined. In this last subchapter it is necessary, therefore, to state whose emotions, remorse, and stress were described as "ours" and whose culture was meant by "our culture." The answer to these questions in this time of global warming, when all of us worry about planetary environments, is apparently obvious. "We" means everybody, humankind, the very *anthropos* of the Anthropocene. But ... is our culture really global? Do people in all corners of the world

share the same worries, suffer the same pre-TSS? Probably they do, but only if they are part of the Orwellian “big public,” if they are made aware of current public discourse in the West influenced by the findings of Western science. This usually means reading English and/or living in a country where the internet is not censored and the media are allowed to be politically diversified. Thus the “we” in this book is people who participate in (to borrow Build’s term) Climate Change Culture and watch Western media and Western movies. In order to justify the main claim that Doomsday Clock Narratives have the ability to expose anxieties which have been permeating (Western) civilisation for decades, I restricted my analysis in this book to novels written in English (with one exception, the Japanese *The Last Children of Tokyo*, which has been translated into English and whose author lives in Europe). I believe that my selection of texts is broad enough to show convincingly that reading climate anxiety through the lens of a nuclear holocaust allows us to better understand today’s culture with all its denials, fears, and false hopes. I do not pretend that my claims are “globally” true, but I hope I have proved they are true for people who know that the climate is changing. We all share the same planet, but, unfortunately, not all of us are permitted to participate in “global” science, and the recent events in my part of the world show that frontiers, walls, and curtains reappear and the division between “us and them” is rearing its ugly head once again.

I started to work on (*Eco*)*Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives* during the Covid-19 pandemic, when the overpopulation and ecological devastation of the planet were beginning to clearly show. The initial idea was that the environmental catastrophe which had shut us all in our isolated homes could no longer be ignored, not really. You could superficially deny disaster and go on with your planet-devastating lifestyle, but only at the price of suppressing unpleasant truths and developing some kind of neurotic disorder. What I did not expect, reading and rereading speculative fictions and searching for instances of these “unpleasant truths” coming back to us in the guise of fantasies, was the return of the nuclear threat to our lives. The possibility that, in the twenty-first century, any government could seriously ponder the intentional detonation of an atom bomb which would render a large part of Europe uninhabitable did not cross my mind, not for a second. Decades of peace had made Europeans feel safe. There were some atom bomb drills at my communist primary school in the late 1980s, but even back then, learning to put on a gasmask in the event of atomic bombs had seemed absurd. Our instructors had thought the same; they did not take these drills seriously. Fall-out shelters, mushroom clouds, duck-and-cover, and decontamination techniques all belonged in the 1950s. Yet, I do remember being afraid of fall-out and contamination in the 1980s. One

day, when I was at school, people in white coats came and told us about the spreading radiation after the explosion at Chernobyl. They gave us a potassium iodine solution to drink, which tasted watery and vile and was supposed to protect our thyroid glands from the ravages of radiation caused by inhaled or swallowed radioactive iodine. I remember how, for a moment, I feared I was going to die. Movies such as *When the Wind Blows*, *War Games*, or *The Sum of All Fears* always remind me of that feeling and that taste.

So, half way through writing *(Eco)Anxiety in Nuclear Holocaust Fiction and Climate Fiction: Doomsday Clock Narratives*, the traumatic past caught up with us. A “hot” war broke out in Eastern Europe, instantly ending the thirty-year period of relative tranquillity. It first felt as if a nuclear holocaust story was happening all around; the very phrases the media were using—“the Free World,” “dirty bomb,” “fall-out shelter,” “the possibility of nuclear war”—sounded like quotes from old Doomsday Clock Narratives. “The Free World,” as we used to call it in my childhood, now stretches further east, and my country is luckily still a part of it. But my Ukrainian students (about 10% of my students at the University of Warsaw are Ukrainian) do not know if they will be able to keep saying the same about their country. The war is precisely being waged over where to draw the line between “us and them,” reinforcing this obsolete distinction (which was false in the first place) and making us both—Poles and Ukrainians—the enemies of those people who live even further east.

Since 1945, it has been evident that our species is, technically and morally, capable of vaporising whole cities and exterminating all living things over vast expanses of terrain. During the Cold War, the fear of nuclear Armageddon was periodically prompted by a number of political crises. David Cordle, in the already-quoted essay “Anxiety and the Cold War in *The Nuclear Age*,” maintains that the moments of heightened tension (the Korean War, the Berlin crisis of 1961, the Cuban Missile Crisis, the early days of the Reagan administration), when nuclear issues were a subject of public debate, were interspersed throughout long periods of suppressed anxieties. The Cold War, from the psychological point of view, meant decades of numbness interrupted by short periods of acute fear. After 1989, the global psychodynamics changed and the fear of immediate death in an unexpected nuclear war was gradually replaced by an awareness of the slowly approaching eco-catastrophe. And yet now all has changed—here in Europe we are living through yet another period of heightened tension; as I am preparing the final draft of this book, the news is becoming more and more alarming.

- Five days ago the US president, in a warning speech, said that the risk of nuclear war had not been as high since the 1962 Cuban Missile Crisis.

- The media speculate that Russia is ready to resort to a nuclear show of force over the Black Sea—perhaps Russia may be preparing a “false flag” attack of its own.
- Security experts warn that the use of nuclear weapons in the Black Sea region could trigger a poisonous toxic gas cloud and six-and-a-half-foot-high tsunamis.
- Supposedly, top NATO commanders were warned earlier this week of the potential detonation of a “dirty bomb” in Ukraine.
- According to other experts, Russia could also nuke some remote region, or conduct a test.
- The municipal service workers in my home city are inspecting old half-buried fall-out shelters for potential use.

Right now, at the moment of writing, 480 miles to the east of me, a major European capital is suffering bombing raids. Just a month ago I was petrified to learn of a shortage of potassium iodine—the very same substance I remember so well—at chemists in my country. People are hoarding. I can’t believe it is happening.

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